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AVIATION

The Oldest American Aeronautical Magazine

MARCH 22, 1926 Issued Weekly PRICE 15 CENTS

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VOLUME XX

NUMBER 12

SPECIAL FEATURES

THE CYFIBBIAN CONTEST

COMMERCIAL AVIATION IN THE AMERICAN TROPICS

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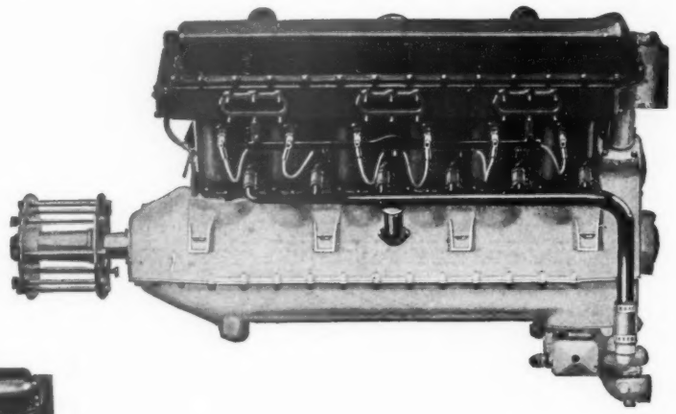

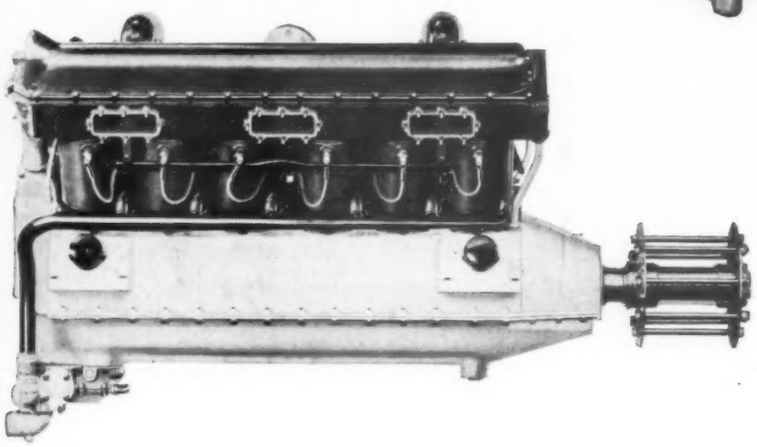

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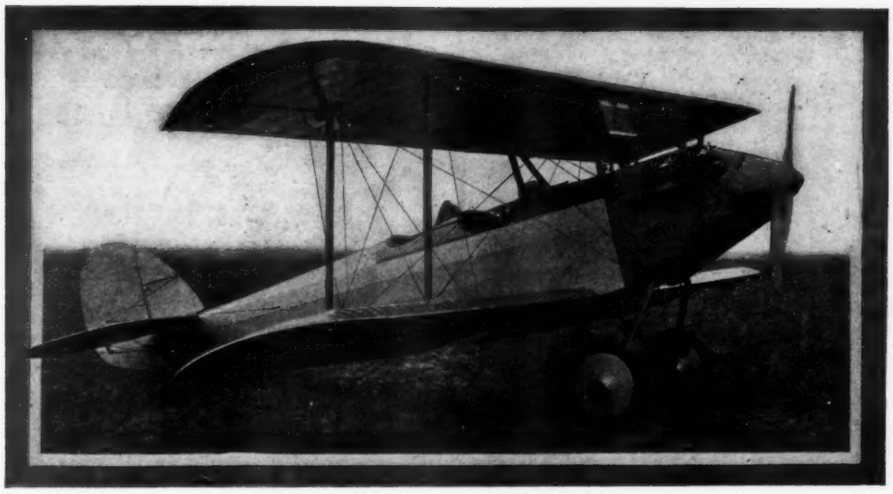

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MARCH 22, 1926

AVIATION

VOL. XX. NO. 12

Published every Monday

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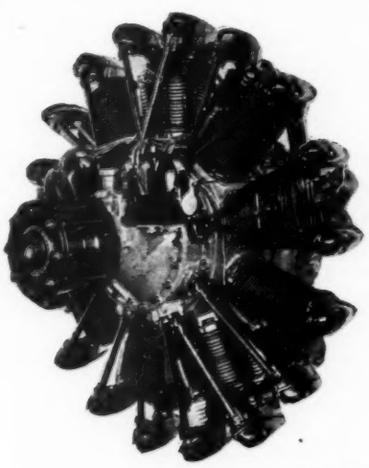

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The Trend of Air Transport Development

IN THE development of a new art or system it is the natural and general trend to investigate and if possible learn from the experiences of others who have been active in the particular sphere under consideration. This has proved true of air transportation and its development in this country is not being undertaken without a full knowledge of the activities of a similar nature abroad. Much has been said and written on the air transport activities in Europe but, as far as the United States is concerned, activities of far greater import are to be found in the now well known Scadta airlines of Colombia, South America. Elsewhere in this issue, AVIATION is fortunate in being able to publish a very complete and thoroughly authentic account of these activities.

Not only has the Scadta proved the possibility of reliable air transportation for both air mail or freight and passengers but its success, together with the comparative proximity of Colombia to the United States, makes the activities of great importance to air operations here, since, with the development of air transport will follow the inter-cooperation of all airlines, just as railroad systems cooperate today.

The success of the Colombia air transport company is largely a result of the conditions under which the operations are carried on. These are such as to lend themselves admirably to this form of travel, all other means of communication over the three great mountain ranges which cut through the country being necessarily peculiarly bad.

That the type of transport service with which an airline has to compete is of extreme importance and influence upon the success of the air method of travel is very strikingly shown in the record of the Scadta operations, for there is recorded a very marked difference between the amount of traffic carried on by air in the upstream direction along the Magdalena River and that traveling in the opposite direction. The difference in loads carried, amounting in some cases to almost as much as 100%, are explained by the fact that the time taken to do the journey by the steamer is, naturally, less downstream than in the opposite direction, and, consequently more passengers avail themselves of air travel in the direction in which the gain in speed is greatest.

One extremely interesting question raised in connection with air transport operations is the development of equipment. The Scadta company is said to give considerable attention to development. It is a general tendency for air transport companies to adopt the type of aircraft available which appears to be most suited to the requirements. The practice of air transportation companies developing their own aircraft is, however, by no means new. The Junkers air transport company of Germany, had, until the recent German combine, long followed this practice and the Junkers manufacturing companies worked in close accord with the airlines, acting as an intermediary between the technical airplane designer and the practical air transport operator. That an air transport company should necessarily be a manufacturer of airplanes is by no means the case, but experience would indicate the need for the closest cooperation between operator and manufacturer in order that the latter may fully understand the requirements of the former and the former the needs of the manufacturer, as far as economy in production is concerned. That the Scadta company has acquired equipment very suitable to the demands of its air services must be acknowledged since their operations have met with such success.

Small Multi-Engined Planes

THE TECHNICAL advancement in the design of both airplanes and engines is making possible the building of a three-engined plane of comparatively low horsepower. Hitherto three small engines would have weighed very much more than one engine of equal total horsepower. Recent developments, however, have resulted in the construction of small commercial engines which, while heavier per horsepower than a single large engine of modern design are still considerably lighter than older types of engines which are used in many single-engined commercial planes. This and simpler engine mountings have made possible, at least theoretically, the building of a small three-engine plane of reasonably good performance.

There is a vast difference, however, between being able to build an airplane of a certain type and being able to sell it commercially. Superficially, the lower initial cost, better performance and cheaper maintenance of the single-engined plane, would seem to give it an advantage. However, there are certain operating conditions where the greater practical freedom from forced landings would make a real saving in total cost. Forest patrol flights over certain regions, cross-water flights in land planes and certain kinds of night and fog flying, are typical examples where the operation of a multi-engine plane would, in the long run, be cheaper than a single-engine machine. There are also stretches of wilderness and desert country where the hardships in the event of a forced landing and the chances of being unable to salvage the plane are such as to make the multi-engine plane imperative for regular commercial operations. There are also, probably, a certain number of wealthy men who would pay the extra cost of owning a plane with greater reliability and safety.

The engines themselves would not cost much more per horsepower than a single engine as there would be more units produced and the engines could be used in smaller single-engine planes. Also, one spare engine ready to replace, and one undergoing overhaul, would be sufficient and would keep a steady flow of work in the shop, whereas in a large single-engine plane, two spare power plants may be necessary,—one for emergency replacement and one for overhaul. Three small engine units can also be handled by a smaller crew and a greater variety of spares can be kept on hand.

The Merritt Bill Amends Bingham Bill

Drastic Changes Made By House Committee. All Planes, Pilots, Mechanics Affected.

THE BINGHAM BILL for the regulation of aviation in the United States passed the Senate on Dec. 16, 1925. It was referred to the Committee on Interstate and Foreign Commerce of the House of Representatives on Dec. 17. A sub-committee headed by Hon. Schuyler Merritt rewrote the Bingham Bill and it has been reported to the House of Representatives for passage. No hearings were held. The Merritt Bill represents what may be termed a successor of the Winslow Bill. If passed by the House it will go to a conference committee consisting of three Senators and Representatives. The conference bill reported by this committee will probably be passed by both the Senate and House of Representatives as it comes from the committee.

The Bill

The Merritt Bill which is termed an amendment to the Bingham Bill but which is almost completely new follows:

AN ACT

To encourage and regulate the use of aircraft in commerce and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be the duty of the Secretary of Commerce to foster civil air navigation in accordance with the provisions of this Act, and for such purpose—

(a) To encourage the establishment of airports and other air navigation facilities.

(b) To make recommendations to the Secretary of Agriculture as to necessary meteorological service in connection with the maintenance of established airways.

(c) To study the possibilities for the development of commercial air navigation and the aeronautical industry and trade in the United States and to collect and disseminate information relative thereto.

(d) To advise with the Bureau of Standards and other agencies in the executive branch of the Government in carrying forward such research and development work as tends to create improved light or other signal structures, radio directional finding facilities, and other air navigation facilities. The Secretary of Commerce is authorized to transfer funds available for carrying out the purposes of this subdivision to any such agency for carrying forward such research and development work in cooperation with the Department of Commerce.

(e) To investigate, record, and make public the causes of accidents in civil air navigation in the United States.

(f) To exchange with foreign governments through existing governmental channels information pertaining to civil air navigation.

Powers

SEC. 2. REGULATORY POWERS.—The Secretary of Commerce shall, by regulation—

(a) Provide for the registration of eligible aircraft. No aircraft shall be eligible for registration (1) unless it is a civil aircraft owned by a citizen of the United States and not registered under the laws of any foreign country, or (2) unless it is a public aircraft of the Federal Government or of a State, Territory, or possession, or of a political subdivision thereof. All aircraft registered under this subdivision shall be known as aircraft of the United States and shall be entitled to the benefits conferred and shall be subject to the duties imposed by law upon such aircraft. All public aircraft of the Federal Government shall be registered as aircraft of the United States.

(b) Provide for the examination and rating (upon registration and periodically thereafter) of aircraft of the United States as to their airworthiness.

(c) Provide for the periodic examination and rating of airmen serving in connection with aircraft of the United States as to their qualifications for such service. Such examinations shall be based upon the character, physical fitness, training, and practical experience of the airman.

(d) Provide for the periodic examination and rating of air navigation facilities available for the use of aircraft of the United States as to their suitability for such use.

(e) Establish air traffic rules for the navigation and protection of aircraft in the navigable airspace or waters of the United States, including rules for taking off and alighting, signal rules for land and water structures, rules as to safe altitudes of flight, rules for identification and marking, rules for the maintenance of log books, and rules for the prevention of collisions between vessels and aircraft.

(f) Provide for the periodic issuance and expiration and for the suspension and revocation, of registration, aircraft, airman, and air navigation facility certificates, and such other certificates as the Secretary of Commerce deems necessary in administering the functions vested in him under this Act. Within 20 days after notice that application for any certificate is denied or that a certificate is suspended or revoked, the applicant or holder may file a written request with the Secretary of Commerce for a public hearing thereon. The Secretary upon receipt of the request shall forthwith (1) arrange for a public hearing to be held within twenty days after such receipt in such places as the Secretary deems most practicable and convenient in view of the place of residence of the applicant or holder and the place where evidence bearing on the cause for the denial, suspension, or revocation is most readily obtainable, and (2) give the applicant or holder at least ten days' notice of the hearing, unless an earlier hearing is consented to by him. Notice under this subdivision may be served personally upon the applicant or holder or sent him by registered mail. The Secretary, or any officer or employee of the Department of Commerce designated by him in writing for the purpose, may hold any such hearing and for the purposes thereof administer oaths, examine witnesses, and issue subpœnas for the attendance and testimony of witnesses, or the production of books, papers, documents, and other evidence, or the taking of depositions before any designated individual competent to administer oaths. Witnesses summoned or whose depositions are taken shall receive the same fees and mileage as witnesses in courts of the United States. All evidence taken at the hearing shall be recorded and forwarded to the Secretary for decision in the matter to be rendered not later than ten days after completion of the hearing. The decision of the Secretary, if in accordance with law, shall be final. The denial, suspension, or revocation shall be invalid unless opportunity for hearing is afforded, notice served or sent, and decision rendered within the respective times prescribed by this subdivision.

Exemptions

SEC. 3. EXEMPT AIRCRAFT.—(a) The Secretary of Commerce shall exempt from the requirements of regulations made under section 2, except requirements as to registration or as to air traffic rules upon established airways: (1) public aircraft of the United States and airmen serving solely in connection therewith, and air navigation facilities owned or operated by the United States or any governmental instrumentality thereof and used exclusively (except for emergency public use as provided in section 5) in the service of the Federal Government; and (2) aircraft navigated solely outside of established airways and used solely for experimental or scientific or signaling purposes, and air navigation facilities used solely for such purposes.

(b) The Secretary of Commerce may exempt from the requirements of regulations made under section 2: (1) anchored aircraft, aircraft navigated upon established airways and used solely for experimental or scientific or signaling purposes, or aircraft in the custody of any officer or employee of the United States in pursuance of an examination authorized by law or of a seizure for violation of law; and (2) air navigation facilities used solely for such aircraft and airmen serving solely in connection with such aircraft.

SEC. 4. AIRSPACE RESERVATIONS.—The President is authorized to provide by Executive order for the setting apart and the protection of airspace reservations in the United States for national defense or other governmental purposes and, in addition, in the District of Columbia for public safety purposes. The several States may set apart and provide for the protection of necessary airspace reservations in addition to and not in conflict either with airspace reservations established by the President under this section or with any aircraft designated by the Secretary of Commerce under subdivision (j) of section 10.

SEC. 5. AIDS TO AIR NAVIGATION.—(a) Whenever at any time the Postmaster General and the Secretary of Commerce by joint order so direct, the established airways under the jurisdiction and control of the Postmaster General, together with all airports, emergency landing fields, and other air navigation facilities used in connection therewith, shall be transferred to the jurisdiction and control of the Secretary of Commerce. All unexpended balances of appropriations in respect of such established airways, airports, emergency landing fields, and other air navigation facilities shall thereupon be available for expenditure under the direction of the Secretary of Commerce, in lieu of the Postmaster General, for the purposes for which such appropriations were made.

(b) The Secretary of Commerce is authorized, within the limits of available appropriations hereafter made by the Congress, (1) to establish, operate, and maintain along airways the following: emergency landing fields, light and signal structures, radio directional finding facilities, radio or other electrical communication facilities, and other necessary air navigation facilities; and (2) to chart such airways and arrange for publication of maps of such airways, utilizing the facilities and assistance of existing agencies of the Government so far as practicable. The Secretary of Commerce shall grant no exclusive right for the use of any airway, airport, emergency landing field, or other air navigation facility.

(c) Air navigation facilities owned or operated by the United States may be made available for public use under such conditions and to such extent as the head of the department or other independent establishment having jurisdiction thereof deems advisable and may by regulation prescribe.

(d) The head of any Government department or other independent establishment having jurisdiction over any airport owned or operated by the United States may provide for the sale to any aircraft alighting at the airport fuel, oil, equipment, and supplies, and the furnishing to it of mechanical service, temporary shelter, and other assistance under such regulations as the head of the department or establishment may prescribe, but only if such action is by reason of an emergency necessary to the continuance of such aircraft on its course to the nearest airport operated by private enterprise. All such articles shall be sold and such assistance furnished at the fair market value prevailing locally as ascertained by the head of such department or establishment. All amounts received under this subdivision shall be covered into the Treasury; but that part of such amounts which, in the judgment of the head of the department or establishment, is equivalent to the cost of the fuel, oil, equipment, supplies, services, shelter, or other assistance so sold or furnished shall be credited to the appropriation from which such cost was paid, and the balance, if any, shall be credited to miscellaneous receipts.

(e) Section 3 of the Act entitled "An Act to increase the efficiency and reduce the expense of the Signal Corps of the Army, and to transfer the

Weather Service to the Department of Agriculture," approved October 1, 1890, is amended by adding at the end thereof a new paragraph to read as follows:

"Within the limits of the appropriations which may be made for such purpose, it shall be the duty of the Chief of the Weather Bureau, under the direction of the Secretary of Agriculture, (a) to furnish such weather reports, forecasts, warnings, and advices as may be required to promote the safety and efficiency of air navigation in the United States and above the high seas, particularly upon established airways designated by the Secretary of Commerce under authority of law as routes suitable for air navigation, and (b) for such purposes to observe, measure, and investigate atmospheric phenomena, and establish meteorological offices and stations."

SEC. 6. FOREIGN AIRCRAFT.—The Congress hereby declares that the Government of the United States has, to the exclusion of all foreign nations, complete sovereignty over the airspace above the lands and waters of the United States, including the Canal Zone. Aircraft a part of the armed forces of any foreign nation, including other aircraft in command of an individual who is a member of such forces, shall not be navigated in the United States, except in accordance with an authorization granted by the Secretary of State. The Secretary of Commerce may by regulation exempt from the requirements of section 2 aircraft that are registered under the law of any foreign nation and that are not a part of the armed forces of such nation, if such nation grants a similar exemption in respect of aircraft of the United States, but such foreign aircraft shall not engage in interstate commerce in the navigable airspace or waters of the United States. The President may employ the military or naval forces of the United States to exclude or expel from the United States aircraft of any foreign country entering the United States otherwise than in accordance with the provisions of this section.

Existing Foreign Commerce Laws

SEC. 7. APPLICATION OF EXISTING LAWS RELATING TO FOREIGN COMMERCE.—(a) The navigation and shipping laws of the United States, including any definition of "vessel" or "vehicle" found therein and including the rules for the prevention of collisions, shall not be construed to apply to seaplanes or other aircraft as to the navigation of vessels in relation to seaplanes or other aircraft.

(b) The Secretary of the Treasury is authorized to (1) designate places in the United States as ports of entry for civil aircraft engaged in foreign commerce and for merchandise carried on such aircraft, (2) detail to ports of entry for civil aircraft such officers and employees of the customs service as he may deem necessary, and to confer or impose upon any officer or employee of the United States stationed at any such port of entry (with the consent of the head of the Government department or other independent establishment under whose jurisdiction the officer or employee is serving) any of the powers, privileges, or duties conferred or imposed upon officers or employees of the customs service and (3) by regulation to provide for the application to civil air navigation of the laws and regulations relating to the administration of the customs and public health laws to such extent and upon such conditions as he deems necessary.

(c) The Secretary of Commerce is authorized by regulation to provide for the application to civil aircraft of the laws and regulations relating to the entry and clearance of vessels to such extent and upon such conditions as he deems necessary.

(d) The Secretary of Labor is authorized to (1) designate any of the ports of entry for civil aircraft as ports of entry for aliens arriving by aircraft, (2) detail to such ports of entry such officers and employees of the Immigration Service as he may deem necessary, and to confer or impose upon any employee of the United States stationed at such port of entry (with the consent of the head of the Government department or other independent establishment under whose jurisdiction the officer or employee is serving) any of the powers, privileges, or duties conferred or imposed upon officers or employees of the Immigration Service, and (3) by regulation to provide for the application to civil air navigation of the laws and regulations relating to the administration of the immigration laws to such extent and upon such conditions as he deems necessary.

(e) Any person violating any customs or public health regulation, entry or clearance regulation, or immigration regulation made under this section, shall be subject to a penalty of $500, which may be remitted or mitigated by the Secretary of the Treasury, the Secretary of Commerce, or the Secretary of Labor, respectively, in accordane with such proceedings as the Secretary shall by regulation prescribe. In case the violation is by the owner or the person in command of the aircraft, the penalty shall be a lien against the aircraft. Such penalty may be collected by proceedings in personam against the person subject to the penalty and/or proceedings in rem against the aircraft. Such proceedings shall conform as nearly as may be to civil suits in admiralty, except that either party may demand trial by jury of any issue of fact, if the value in controversy exceeds $20, and facts so tried shall not be reexamined other than in accordance with the rules of the common law. The fact that in a libel in rem the seizure is made at a place not upon the high seas or navigable waters of the United States, shall not be held in any such way to limit the requirement of the conformity of the proceedings to civil suits in rem in admiralty. The Supreme Court of the United States, and under its direction other courts of the United States, are authorized to prescribe rules regulating such proceedings in any particular not provided by law. The determination under this section as to the remission or mitigation of a penalty imposed under this section shall be final. In case libel proceedings are pending at any time during the pending of remission or mitigation proceedings, the Secretary shall give notice thereof to the United States attorney prosecuting the libel proceedings.

(f) Any aircraft subject to lien for any penalty imposed for the violation of a customs, public health, entry, clearance, or immigration regulation made under this section, may be summarily seized by and placed in the custody of such persons as the appropriate Secretary may by regulation prescribe and a report of the case thereupon transmitted to the United States attorney for the judicial district in which the seizure is made. The United States attorney shall promptly institute proceedings for the enforcement of the lien or notify the Secretary of his failure so to act. The aircraft shall be released from such custody upon (1) payment of the penalty or so much thereof as is not remitted or mitigated, (2) seizure in pursuance of process of any court in proceedings in rem for enforcement of the lien, or notification by the United States attorney of failure to institute such proceedings, or (3) deposit of a bond in such amount and with such sureties as the Secretary may prescribe, conditioned upon the payment of the penalty or so much thereof as is not remitted or mitigated.

SEC. 8. FEES.—There shall be paid to the Secretary of Commerce prior to each issuance of a certificate by him under this Act a reasonable fee in an amount to be fixed by the Secretary. All fees and penalties paid to the Secretary under this Act shall be covered into the Treasury as miscellaneous receipts.

Addition to Commerce Department

SEC. 9. ADDITIONAL ASSISTANT SECRETARY OF COMMERCE.—To aid the Secretary of Commerce in fostering air navigation and to perform such functions vested in the Secretary under this Act as the Secretary may designate there shall be an additional Assistant Secretary of Commerce, who shall be appointed by the President, by and with the advice and consent of the Senate and whose compensation shall be fixed in accordance with the Classification Act of 1923. Except as otherwise specifically provided, the Secretary of Commerce shall adminster the provisions of this Act and for such purpose is authorized (1) to make such regulations as are necessary to execute the functions vested in him by this Act; (2) to make such expenditures (including expenditures for personal services and rent at the sent of government and elsewhere and for law books, books of reference, and periodicals) as may be necessary for such administration and as may be provided for by the Congress from time to time; (3) to publish from time to time a bulletin setting forth such matters relating to the functions vested in him by this Act as he deems advisable, including air navigation treaties, laws, and regulations and decisions thereunder; and (4) to operate, and for this purpose to purchase within the limits of the available appropriations hereafter made by the Congress, such aircraft and air navigation facilities as are necessary for executing the functions vested in the Secretary of Commerce by this Act.

SEC. 10. DEFINITIONS.—As used in this Act—

(a) The term "citizen of the United States" means (1) an individual who is a citizen of the United States or its possessions, or (2) a partnership of which each member is an individual who is a citizen of the United States or its possessions, or (3) a corporation or association created or organized in the United States or under the law of the United States or of any State, Territory, or possession thereof, of which the president and three-fourths or more of the board of directors or other managing officers thereof, as the case may be, are individuals who are citizens of the United States or its possessions and in which at least 51 per centum of the voting interest is controlled by persons who are citizens of the United States or its possessions.

(b) The term "United States," when used in a geographical sense, means the territory comprising the several States, Territories, possessions, and the District of Columbia (including the territorial waters thereof), and the overlying airspace; but shall not include the Canal Zone.

(c) The term "aircraft" means any contrivance now known or hereafter invented, used, or designed for navigation of or flight in the air, except a parachute or other contrivance designed for such navigation but used primarily as safety equipment.

(d) The term "public aircraft" means an aircraft used exclusively in the governmental service.

(e) The term "civil aircraft" means any aircraft other than a public aircraft.

(f) The term "aircraft of the United States" means any aircraft registered under this Act.

(g) The term "airport" means any terminal landing field or other supporting surface (including structures fixed thereto or anchored or floating theron) which is suitable for use for the landing and taking off of aircraft.

(h) The term "emergency landing field" means any landing field or other supporting surface (including structures fixed thereto or anchored or floating thereon) which is suitable for use both as a location for landing lights and other signal structures, radio or other electrical communication facilities, and other necessary air navigation facilities, and as an emergency landing place for aircraft navigating the airway.

(i) The term "air navigation facility" includes any airport, emergency landing field, light or other signal structure, radio directional finding facility, radio or other electrical communication facilty, and any other structure or facility, used as an aid to air navigation.

(j) The term "airway" means a route in the navigable airspace designated by the Secretary of Commerce as a route suitable for air navigation.

(k) The term "established airway" means any airway along which there have been installed emergency landing fields, and light or other signal structures, or radio or other electrical communication facilities, or other air navigation facilities.

(l) The term "airman" means any individual (including the master and any pilot, mechanic, or member of the crew) who engages in the navigation of aircraft while under way, and any individual who is in charge of the inspection, overhauling, or repairing of aircraft.

SEC. 11. NAVIGABLE AIRSPACE.—As used in this Act, the term "navigable airspace" means airspace above the minimum safe altitudes of flight prescribed by the Secretary of Commerce under section 2, and such navigable airspace shall be subject to a public right of freedom of interstate and foreign air navigation in conformity with the requirements of this Act.

SEC. 12. ADVISORY COMMITTEE FOR AERONAUTICS.—The membership of the Advisory Committee for Aeronautics is increased from 12 to 15 members, to be appointed by the President. Of the additional members one shall be a representative of the office of the Assistant Secretary of Commerce in charge of civil air navigation, one of the office of the Assistant Postmaster General in charge of the Air Mail Service, and one of the Coast Guard.

Penalties

SEC. 13. PENALTIES.—(a) It shall be unlawful, except to the extent exempt under section 3 or 6 of this Act—(1) to navigate any aircraft in the navigable airspace or waters of the United States otherwise than in conformity with the air traffic rules and with the Executive orders regulating airspace reservations; (2) to navigate any aircraft in such navigable airspace or waters, unless such aircraft is registered

as an aircraft of the United States and has an aircraft certificate; (3) to serve as an airman in connection with any aircraft of the United States without an airman certificate; or (4) to maintain any land or water structure in violation of the air traffic rules. Any person willfully committing any offense in violation of this subdivision shall be punishable by a fine not exceeding $500 or by imprisonment not exceeding 90 days, or by both such fine and imprisonment.

(b) Any person (1) who, with intent to interfere with air navigation in the navigable airspace or waters of the United States, exhibits within the United States any false light or signal at such place or in such manner that it is likely to be mistaken for a true light required by regulation under this Act or for a light or signal connected with an airport or other air navigation facility; or (2) who knowingly removes, extinguishes, or interferes with the operation of any such true light or signal; or (3) who without lawful authority knowingly exhibits any such true light or signal; or (4) who fraudulently forges, counterfeits, alters, or falsely makes any certificate authorized to be issued under this Act, or knowingly uses or attempts to use any such fraudulent certificate, shall be guilty of an offense punishable by fine not exceeding $5,000 or by imprisonment not exceeding five years, or by both such fine and imprisonment.

(c) The Congress hereby declares that the application of the provisions of this section to intrastate air navigation in the navigable airspace is made necessary for the reason that air commerce is a unit and does not regard State lines and that interstate and intrastate air navigation are so mingled together that the United States can not exercise complete effective control and protection of air navigation in interstate and foreign commerce and prevent interference therewith without incidental regulation of intrastate air navigation in the navigable airspace.

(d) The Government of the United States hereby consents that the several States, and the Territories and possessions of the United States (and any political subdivision thereof in pursuance of the law of the State, Territory, or possession), may by law (1) provide for the prosecution of offenses that are punishable by the Federal Government under this section and that concur within their respective territorial jurisdiction or in the airspace above such territory, and (2) prescribe penalties or forfeitures, civil or criminal, to be imposed for such offenses. The trial and acquittal, or the conviction, of any person under any such law for any such offense shall constitute a bar to the trial and conviction of such person by the Federal Government for such offense. Prosecution under this subdivision shall be in accordance with such practice and rules of evidence, pleadings, and forms and modes of proceedings as the State, Territory, or possession may prescribe.

SEC. 14. SEPERABILITY.—If any provision of this Act is declared unconstitutional or the application thereof to any person or circumstance is held invalid, the validity of the remainder of the Act and the application of such provision to other persons and circumstanses shall not be affected thereby.

SEC. 15. TIME OF TAKING EFFECT.—This Act shall take effect upon its passage; except that no penalty shall be enforced for any violation thereof occurring within 90 days thereafter.

Charles L. Lawrance Returns From Europe

Charles L. Lawrance, president of the Wright Aeronautical Corp., returned to the United States aboard the White Star liner, Majestic, arriving in New York, on March 9. Mr. Lawrance has been in England and the European Continent for the past two months on an inspection tour of aeronautical activity and, during his stay, addressed engineers on several occasions on the subject of American aircraft engine development. His lecture before the Royal Aeronautical Society on this subject is of such outstanding interest and completeness that it is being reprinted in its entirety in AVIATION. The present issue contains the second and final part of this lecture, the first part of which appeared in the issue of March 15.

Balloon Officers Reunion

The second annual dinner and reunion of the Association of Balloon Officers of the World War will be held on Saturday, March 27, at 7 p. m., at the Yale Club, Vanderbilt Ave. and 44th. St., New York City. Col. C. deF. Chandler will act as toastmaster, and Col. Chalmers G. Hall, who was on the Shenandoah at the time of its loss, will be the principal speaker. The cost will be $6.00 a cover, and all officers of the Army or Navy, who are, or have been in the balloon or airship service, will be welcome. Reservations should be sent to David Q. Hammond, 150 Nassau Street, New York City.

Berlin-Vladivostok Air Line Planned

A 50 hr. airplane service between Berlin, Germany and Vladivostok, Russia, the principal Soviet port on the Pacific, will be opened this year, it is announced from Moscow. Regular service will be maintained on the route of nearly 5000 miles, the planes flying day and night. At present the running time by rail between Berlin and Vladivostok, via the Paris-Vladivostok express, is 13 days, 4 hr.

The new air line is being organized by the German-Russian Navigation Company ("Deruluft"). From Vladivostok a special connecting airplane line will go to Tokio.

Stops will be made at Moscow, Omsk and Irkutsk. Flying bases have already been established for the planes in these cities and in Vladivostok. Regular airplane service between Berlin and Moscow has been conducted for the past two years. Last year 1741 passengers were carried and 395,500 lb. of goods, including mail.

Aviation Subsidy Voted By Prussian Diet

An extra 2,500,000 marks has been voted by the Main Committee of the Prussian Diet for aviation subsidy purposes, it has been announced.

It is reported that 1,500,000 marks of this sum are to buy a share in the new "Lufthansa" trust for the Prussian State. As a justification for the credit, it was announced that, during the year 1925, passenger traffic had been over 10 times as heavy, freight traffic 100 times, postal traffic 30 times and newspaper traffic 14 times as heavy, as during 1924.

During the past year, only two accidents costing 3 lives were registered officially to German commercial aviation. This, with a total of nearly 100,000 passengers carried, is said to make an accident coefficient of 0.03 per miles, which is lower than that of any other form of transportation. During the same time there were 11,056 accidents involving 143 deaths on the streets of Berlin.

Full flying activity, which has been suspended during the past few months, is to begin again on April 1, 1926. The number of lines operating in the interior of Germany will remain about the same, even though the Deutsche Aero Lloyd and the Junkers concerns now have united into one, as announced a few weeks ago in AVIATION.

Navy Air Squadrons in Winter Practice

The Aircraft Squadrons, Scouting Fleet, consisting of Scouting Squadron VS-1 and Torpedo Squadron VT-1, have completed their flight from Hampton Roads to the Guantanamo area with great credit, according to advices which have been sent from the fleet. The squadrons, consisting entirely of SC planes, with Wright Tornado engines, will be attended during the winter by the aircraft tenders, U.S.S. Wright, U.S.S. Sandpiper, and U.S.S. Teal.

The VS-1 and VT-1 squadrons left Hampton Roads for Guantanamo on Jan. 20, and made their first stop at Charleston. On Jan. 22, they hopped to Ferandina and on Jan. 23, they proceeded to Miami, and all arrived at Key West on Jan. 26. On Jan. 31, they flew from Key West to Cienfugos and proceeded to Media Luna Cay, in Guacanayabo Bay in the Guantanamo area, on Feb. 3.

Here, targets were immediately laid out and the squadrons settled down at once to their strenuous winter's practice, as the result of which greater efficiency in scouting, bombing and torpedo-launching is to be expected. The Tornado power plants functioned admirably throughout and have proved extremely reliable.

Commercial Aviation in the American Tropics

An Economic Analysis.

By P. P. v. BAUER, Ph.D.

Managing Director of the SCADTA Air Lines, Colombia, S. America.

AIRCRAFT AS a common carrier and commercial aviation as a business undertaking have often been discussed in the last months; many doubts have been expressed as to whether financial success could be attained by an air-transportation company, unaided by the government subsidies. In these discussions, reference has been made to the Scadta Airlines in Colombia, S.A. as an example of a financially sound and successful aviation company. It therefore may be of interest to analyze the economic development of the Scadta Company and to investigate the reason for the company's ability to yield a satisfactory profit upon the invested capital.

Generally speaking commercial aviation is an express service. It offers to the public a considerable advantage over other means of transportation in the time it saves in the carriage of mail, express packages and passengers. For this saving in time rather than for speed the public is willing to pay high freight rates and passenger fares. In addition to this, however, an airline must offer a degree of safety, reliability and comfort in operation, comparable to those offered by competing systems. Of course, the value of the factor of time-saving varies with the location of the service; an hour in New York is probably more valuable than a day in the Tropics. Nevertheless, the business prospects of a commercial aviation company will improve with each increase in the total time saved, whether the improvement be in the flying time or in the service rendered by the company's subsidiary means of transportation at the flying terminals.

Geographical Conditions

Not by mere chance was Colombia first of all the Latin-American countries to develop commercial aviation. Situated on the northwestern corner of the South American continent, with an equally long Caribbean and Pacific coast, Colombia is divided by three long parallel mountain ranges of great height. Its total population is about 6,000,000. The centers of population and production are located on high plateaus, with a cool and healthy climate, several hundred miles from the coast. Due to the longitudinal formation of the main valleys, traffic between these high plateaus is impeded by the mountain ridges. Local conditions therefore have tended to force communication between the high plateaus via the main valley of the Magdalena, which is the only navigable waterway in the country. Colombia today is the second largest coffee-producing country in the world, and the producing centers of that crop, situated far from the coast, have found the Magdalena river the only practical traffic route for their exports and imports. Except for a small part in the southwestern corner of the republic, the traffic has turned toward the Caribbean Sea as an outlet. Therefore such seaports as Cartagena, Barranquilla and Santa Marta are the tidewater basis of Colombian Commerce.

Time-Saving

The only communication between these seaports and the interior is by river steamer,—a long and tedious trip. Normally it takes eleven days to travel from Barranquilla to Bogota, the capital, but during the dry-season and even during the floods, traffic on the Magdalena river is frequently interrupted. Railway undertakings in Colombia have sought to connect the riverports of the Magdalena with the high plateaus in the Andean Mountains.

By establishing an air-line via the Magdalena River the Scadta Company has substituted for the slow steamer service, a system of aerial transportation, with a resultant time-saving so substantial as to be without parallel in the world. Furthermore, the company has extended its organization to include rapid means of transportation to and from its flying terminals and has established a mail and express service which now covers the entire country. The Scadta service, therefore, is not confined to actual flying, in fact,

Three Scadta Seaplanes at Girardot, Colombia

it has outgrown that limit by transporting within its own organization, and under its sole responsibility, mail, express packages and passengers from any point of origin to the ultimate point of destination.

If we analyze the load of one plane, leaving Barranquilla, we shall find that a considerable percentage of the airmail originates in foreign countries; another percentage has been brought in by special feeder lines from other coastal cities, such as Cartagena, Santa Marta and Cienaga, while the remainder has been delivered by local customers in Barranquilla. The same is true of passengers. Some may have booked their air passages before sailing from New York, or from Panama, others in Cartagena or Barranquilla.

The seaplane flies from Barranquilla to Girardot the riverport of Bogota, in about 8 hours, or well within the daylight hours of any day. The plane stops en route at Puerto Wilches, where it connects with an air line to Bucaramanga; at Barranca Bermeja, where it serves the greatest oil fields of Colombia; at Puerto Berrio, the riverport of Medellin; at Honda, where connection is made with Manizales; and finally at Girardot, where the load is distributed by air to Neiva, by rail to Ibagué, to Western Colombia and Bogota, and by automobile to the eastern cities, such as Tunja and Sogamoso. Representatives of the Scadta company take charge of mail, express goods and passengers on the connecting lines, to and from the airports. The mail is furthermore protected by a special guard.

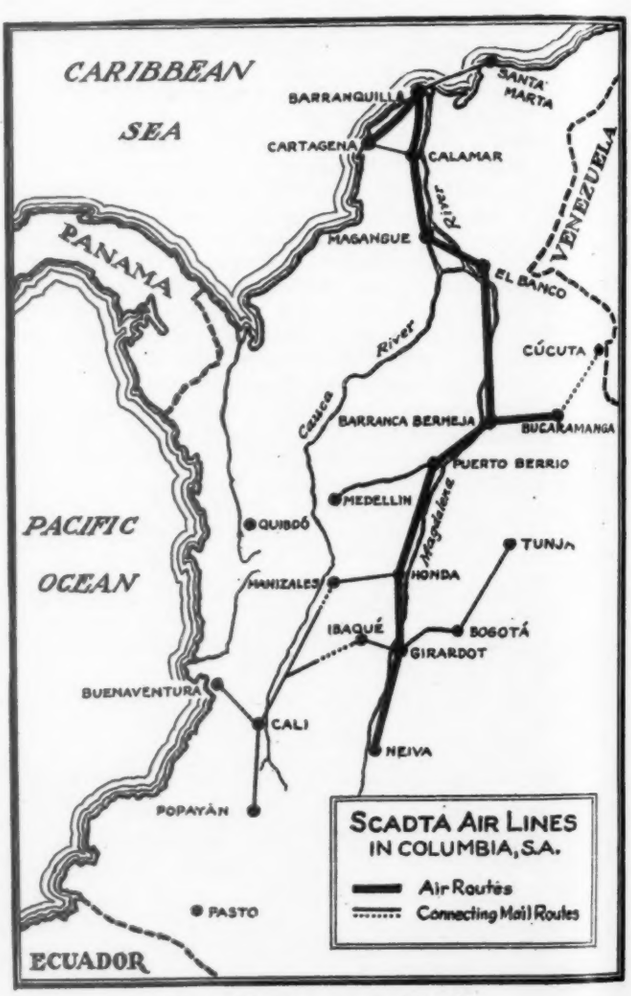
It is important to note that the company's success has been attained not solely by the development of its flying service, but by an increased time saving through the provision of adequate terminal connections to the different cities. Colombia is the only country in the world having a Federal law which provides that every railroad must organize a special gasoline car service, to connect with arriving and departing airplanes on its established air routes. The air mail time of a letter from Barranquilla to Bogota formerly was 36 hours, due to poor terminal connections; night operation on the railroad between the airport at Girardot and Bogota has reduced this time to 24 hours. A letter by ordinary mail (river steamer) from the coast to the interior would, under normal conditions, take upward of 10 days for delivery. It is therefore readily understood, that the greatest advantage the public has derived from the air service has been the well organized air mail facilities of the Scadta Company. The passenger service is almost equally important, and the statistics given later in this article prove the steadily growing use of the planes for passenger travel, the number of passenger miles showing a marked increase with every year.

So much for the all-important time-saving factor of the Colombian air service. The factors of Safety, Reliability and Comfort must also receive some study.

Safety

Aviation has now developed sufficiently to guarantee a satisfactory degree of safety in the operation of a properly organized commercial line. Relatively speaking, safety will depend on the selection of a well trained and reliable personnel, the selection and development of an efficient type of aircraft, and finally the provision of an adequate ground organization. Pilots, engineers and mechanics must necessarily be of the highest type available. The work of a commercial pilot is perhaps less alluring than that of a military flier, but the company will have to depend largely on his sense of responsibility, his desire to avoid extraordinary risks, and his settled preference for the rewards of regular and safe operation rather than for the shining fame of the "stunt flier" and the aerial explorer. This has been the fixed policy of the Scadta Company in the selection of personnel and the operating record of the past four years proves the soundness of the idea.

Similarly, an aviation company must seek to secure the most modern and efficient types of flying equipment available in the world, paying special attention to the climatic and geographical conditions under which the line must operate. To secure the best results for itself, the company must devote a certain amount of effort and money to the development of improved types of equipment especially adapted to its own needs. For its Colombian air-service, the Scadta Company has selected an all-metal Junkers seaplane with a capacity of 650 lbs. payload, exclusive of the crew of two (1 pilot and 1 mechanic) and of gasoline for 4 hour's flight. Six seaplanes of this type equipped with 185 hp. BMW engines are operating today on the company's lines. Two Junkers landplanes are in operation on a subsidiary line between the Magdalena river and the high plateau of Santander (Bucaramanga), by an associated company, known as the COSADA. Climatic conditions in the tropics call for an all-metal plane, and a seaplane, besides contributing substantially to the safety of the line, is an economy. It requires no special landing fields, which in tropical countries are prohibitive in cost of construction and maintenance. During the flight, an emergency landing can be made at any moment. Bad weather, fog, trouble with engines and plane, even discomfort of a passenger, can be cared for by an immediate landing on the river. Seaplane service has also the important advantage of offering, from a legal standpoint, a similarity to the merchant marine, facilitating the establishment of a legal status for the whole air-service by slight modification of the laws and regulations applicable to shipping.



The Scadta air routes of Colombia

The Scadta Company has its principal air-port in Barranquilla, where it can handle even the most difficult of repairs. This is today probably the largest civil airport in Latin America. It affords harbor and hangar facilities and well equipped repair shops for Junkers planes as well as for the large Dornier Wal type of seaplanes. In addition, another airport has been built in Girardot, and in several small riverports, stations with spare parts, and fueling facilities have been established. Telegraphic and radio communication between the different points along the route is in existence, although its efficiency could be improved.

No transportation enterprise is absolutely free from accident. The Scadta is no exception to this truism. During a special demonstration flight, not connected with its regular service, a seaplane met with disaster, resulting in heavy loss of life. Apart from this, however, during the long run of five years of uninterrupted operation on its regular schedule, no serious accident has occurred, no passenger has been killed or even seriously injured and no mail-bags, goods or valuables lost. The insurance rates for valuables transported by the Scadta are lower than for transportation by any other means. Likewise the insurance rates for the planes themselves are remarkably low, compared with the rates other air-lines have to pay.

Reliability

The air mail service in Colombia is operated on schedule and every effort is made to follow that schedule to the minute. Every Tuesday and Friday, at 5:30 in the morning, the seaplanes leave Barranquilla and are due to arrive in the different airports on schedule time. The subsidiary air lines and the railroads are timed to connect with the scheduled service of the principal air route. Arriving and departing planes connect in Barranquilla with the mail steamers from and to the United States and Europe. Only two per cent of the scheduled flights have been so delayed as to miss a connecting train in the Interior of Colombia. Unusually bad weather was responsible for these delays. Connections with mail steamers, however, were practically never missed, inasmuch as sufficient time is allowed for another plane to bring in mail and passengers when the regular mail-plane is unable to proceed on schedule.

Within the near future, it is planned to establish a triweekly service along the main airline from Barranquilla to Girardot.

Comfort

A certain amount of comfort in the service as a whole likewise is a factor responsible for the success of the company. The Scadta passengers travel in an enclosed and well protected cabin, in their ordinary clothes, undisturbed by air-currents or bad weather. The company's offices and airports have ideal locations, the former being in close proximity to the Colombian National Post Office and the latter near the river-steamer ports. Whereas landing fields for airplanes generally are located far from the city, seaplane ports can be established conveniently near the center of the community. But it is not only necessary that a trip by plane to the interior and vice versa be made as easy and pleasant as possible to the passengers,—the general organization must also be sufficiently simple to cause no confusion in the mind of the public, when sending mail, express packages or valuables. For this reason, the Scadta Company was forced to build up its own service to the point where it forms a transportation system for mail, express, valuables and passengers from any point of origin to point of final destination. In any country, but especially in tropical countries, any division of responsibility for the transportation service would place a severe handicap on its reliability.

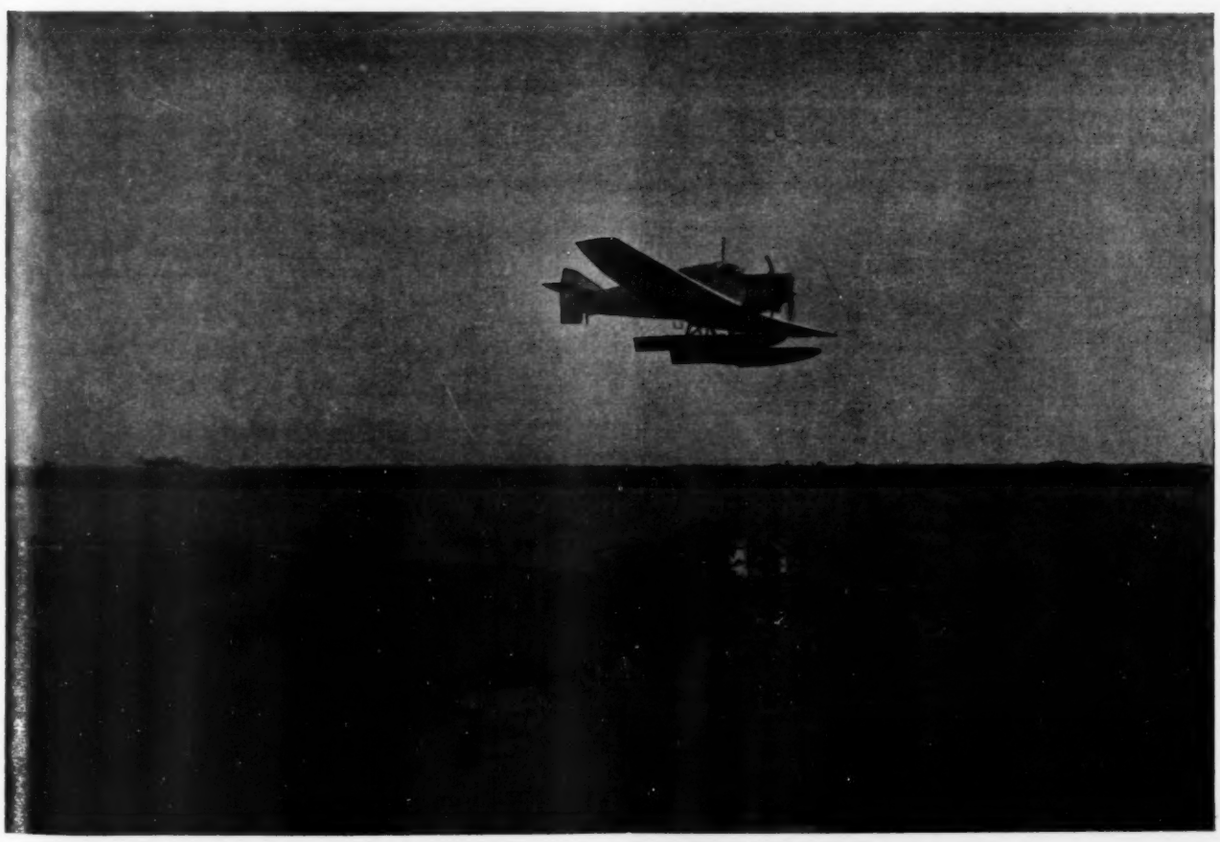
Volume of Traffic

The following table shows the development of traffic within the Scadta organization during the past five years:

	Mileage		*Mail-Service*			*Passenger-Service*		
			number			*number*		
		in	*of*	*weight*	*weight*	*of*	*Pass.*	*Pass.*
Year	*in Km.*	*Miles*	*letters*	*kg.*	*lb.*	*Pass.*	*km.*	*Miles*
1921*	90.662	56.664	26.500	1.552	3.374	379	36.560	22.850
1922	205.990	128.744	148.984	4.834	10.509	1.137	266.870	166.794
1923	296.722	185.451	313.657	8.287	18.015	1.318	411.270	257.044
1924	271.250	169.531	403.050	10.694	23.248	1.084	435.540	272.216
1925	293.129	183.206	492.161	12.118	26.343	1.134	484.056	302.535

**Five months only.*

It will be noted that there is a certain fluctuation in the mileage figures, due to non-scheduled flights, but the number of letters carried, the weight of the air mail, and the amount of passenger mileage show a steady growth from year to year. During 1925, there were 208 scheduled and 113 non-scheduled flights made over the main airline: Barranquilla-Girardot, a distance of 622 miles. The average load of a plane, flying up-stream, was 88.5% of the capacity; on the down-stream flights, 73%. The river steamers making the trip to the coast at a higher speed than up the river, the



A Scadta Seaplane Flying Along the Magdalena River, Colombia

time-saving of the air service, naturally, is reduced and therefore in spite of a lower fare, the passenger traffic likewise.

On the subsidiary line, Girardot-Neiva, about 94 miles, the average load amounted to 94.4% up-stream and 59.8% down-stream. Women and children formed 60% of the passenger total. On the flight up the river, this line competes with a very difficult and uncomfortable four day journey on mule-back. Women and children prefer to fly; while men, mostly cattle ranchers, travel on their horses and mules. From Nevia down to Girardot, rafts are used on the river for the transportation of freight and passengers; although a flight on this stretch takes only a little more than one hour, the competition of these rafts with their 24 hours journey, is clearly felt, as the statistics show.

The Barranquilla-Cartagena line, about 75 miles, yielded an average traffic of 70%. The journey is made along the coast, lagoons and quiet bays providing sufficient emergency landing places to make the coastal flying safe even with a monomotor seaplane.

During the year of 1925, valuables and money in currency to the amount of $1,895,426. were transported by air. Toward the end of 1925, an extremely dry season lowered the waters of the Magdalena River to such an extent as to interrupt the steamer service for several weeks. A very pressing demand for air-service was the result. The flying equipment of the Scadta Company proved to be fully adequate to meet the rush. The service was immediately increased and sometimes as many as three planes dispatched on a mail day.

Sources of Income

Transportation enterprises and especially commercial aviation companies enjoy the advantage of prepaid cash-revenue for their services. The principal income of the company is derived from the mail and express. This department provides for the transportation of ordinary mail, parcel post, valuables, currency, money orders and express packages. The Scadta Company was the first commercial aviation enterprise to establish a money order service in all its own operating agencies. Passenger service is a necessary and equally important addition to the revenue of the company. Finally, the Scientific Department is using the flying equipment of the company for aerial photography, aerial mapping and scientific exploration. This service has been found especially useful for the mapping of oil territory, situated in the heavily wooded low lands of the tropics, which are usually swampy and inaccessable. The aerial exploration and survey of 6000 sq. miles of the Venezuelan-Colombian boundary in the Maracaibo region is one of the achievements of this department, which was remarkable for its economy of time and cost.

Tariffs

The establishment of an adequate tariff for the different branches of the service is the most difficult problem of the economic organization as a whole. The value placed on the time-saving factor by the public (demand for the service), is to be considered; competition by other means of transportation, cost of operation, and carrying capacity are likewise important units in the calculation of the tariff.

First class mail is transported at a price of 30 cts. for every postal ounce of weight, but the company is obligated to transport only those letters which carry in addition to the air mail stamps the ordinary postage stamps of the country in which the letter originates. The air mail stamps are therefore to be considered as a receipt for the extra fee, charged for express transportation by air. The price for a flight from Barranquilla to Girardot (622 mi.) is $200.—and this passage covers the personal weight of the passenger up to 75 kg. (165 lbs.) and a 8 kg. (17½ lbs.) of free baggage. For the year 1925, the average weight of a passenger and his baggage was a little more than 80 kg. (176 lbs.) For the return trip, Girardot-Barranquilla, $150 is charged. Because of the special advantages of aerial transportation, prices are, of course, considerably higher than for other means of transportation. The cost of operation of an air line still is high, due to the necessarily high wages paid for expert personnel. But the company has proved the increasing economy of its services by its ability to reduce the rates for passages. With the growth in the use of aerial transportation, prices are bound to be lowered gradually.

Earnings

The Scadta Company has an authorized capital of $200,000.—divided into 20,000 shares of $10.—each par value. The following cash dividends (in percentage of the authorized capital) have been paid to the shareholders:

1922, 3 per cent; 1923, 6 per cent; 1924, 5 per cent; 1925, 10 per cent.

The distribution of the gross earnings has been made as conservative as possible. Special attention was paid to depreciation charges for flying equipment and other fixed assets of the company. On an average, one dollar income was distributed as follows:

62 cts. for operating expenses; 30 cts. for depreciation; 8 cts. for undivided surplus and cash dividends.

Inasmuch as the company does not receive any subsidy from the government, the earning power of the system can safely be considered to be very satisfactory.

Cooperation With the Government

As a public service, the Scadta has to cooperate very closely with the government. It is only fair to state, that the Colombian government has given to the company every support and assistance possible. Especially the far-sighted and progressive administration of the actual President of the Republic, General Pedro Nel Ospina, has fully realized the importance of aerial transportation in a country such as Colombia. Unhampered by legal restrictions, the company has been able to develop its business gradually, a sufficiently difficult task if it is borne in mind, that no precedent, no previous experiences, existed at the time of the initiation of the service. On the other hand, the government recently has contributed largely to the further development of commercial aviation and its generalization in Colombia by granting a special fund to be used by the Scadta Company for the introduction of 10-passenger seaplanes of the Dornier Wal type on the Colombian main airlines. Today, the Scadta service is thoroughly established in the economic structure of Colombia and has become an absolute necessity, widely supported by the coffee growers, by the banks, and by commercial interests and the public in general.

The above analysis gives a good example of an aerial transportation service which connects all principal cities of a country, the activities of the company being thus reduced to the national territory of one country only. Legally, and in accordance with its settled business policy, the Scadta Company confines its operation to the Republic of Colombia. The statements which have appeared in the Press to the effect that the Scadta plans an extension of its operation to Central America are entirely erroneous.

Future Development of Tropical Aviation

In the United States, commercial airlines are rapidly extending their service to the southern coasts of the country. Logically, the next step in the development of the service will be an air connection between the continents of North and South America, making possible the exchange of air mail and passengers between the air services already in existence. Such a line would operate under conditions even more favorable than those which have contributed so largely to the success of the Scadta and those which have made the Latecoère Line (France to Northern Africa) the most successful in Europe. Essentially a seaplane route, needing no expensive ground organization and meeting no competition except relatively slow steamers, the line would connect the United States with Cuba, seven Central American countries and South America. A large and profitable business in air mail, express and passenger traffic undoubtedly awaits such a line. Its capital requirements of perhaps $2,000,000.—and the fact that it could function only with the cooperation of the United States government departments which control American air mails and seaplane bases, make it certain that the establishment of such a line must be a purely American undertaking. Although it may be delayed, such a seaplane line is bound to come, and when established it will prove one of the most important factors in the development of commerce and mutual understanding among the ten countries it will serve.

Modern American Aircraft Engine Development

Continued from last issue, page 367

By CHARLES L. LAWRANCE
Before the Royal Aeronautical Society

SEVERAL TYPES of American engines are now being built for use inverted. The water-cooled Liberty was the first on which this modification was made and proved very satisfactory from a service standpoint, on account of the greater accessibility of the most important parts as well as on account of the greater vision afforded the pilot in the direct line of flight. From an aerodynamic standpoint the high center of thrust which is easily attained, overcomes the tendency of the airplane to climb when full power is on and allows greater propeller clearance than could otherwise be obtained. The low position of the carburetors frequently allows a gravity fuel installation with many obvious advantages. Some ships, such as the Loening Amphibian, which have been designed around this type of engine, have given very satisfactory results, and the air-cooled Liberty, of which more will be said later, is also designed to be used in an inverted position.

One of the details of aircraft engines in which we have been most backward in the United States, in my opinion, is the matter of reduction gearing. Until very recently practically all engines were built with the direct drive, in spite of the fact that a very satisfactory reduction gear, with a spring coupling, had been developed for some time by the Allison Engineering Company, of Indianapolis. At present practically all the new projects for aircraft engines, except those used for pursuit or training purposes, provide for the installation of reduction gears, and practically every type of reduction gear is being studied or developed by one manufacturer or another.

Air-Cooled Development

Turning to air-cooled engine development. The Wright Whirlwind, 9-cylinder air-cooled engine, of 200 hp., is the only air-cooled engine in quantity production in the United States, although several larger models are in process of development and will, I believe, shortly be produced in quantity. I shall touch upon this later. About 600 Whirlwind engines have now been manufactured and are being generally adopted for commercial service, especially in three-engine passenger planes. The popularity of this engine today, and its availability for commercial aviation, are largely due to the far-sighted attitude of the Bureau of Aeronautics of the United States Navy. Realizing the ultimate possibilities of this type of engine, they decided to make air-cooled engines standard equipment for all power plants up to 300 hp. This in spite of the fact that the Hispano type water-cooled engine that had formerly been used for this purpose was a very reliable engine.

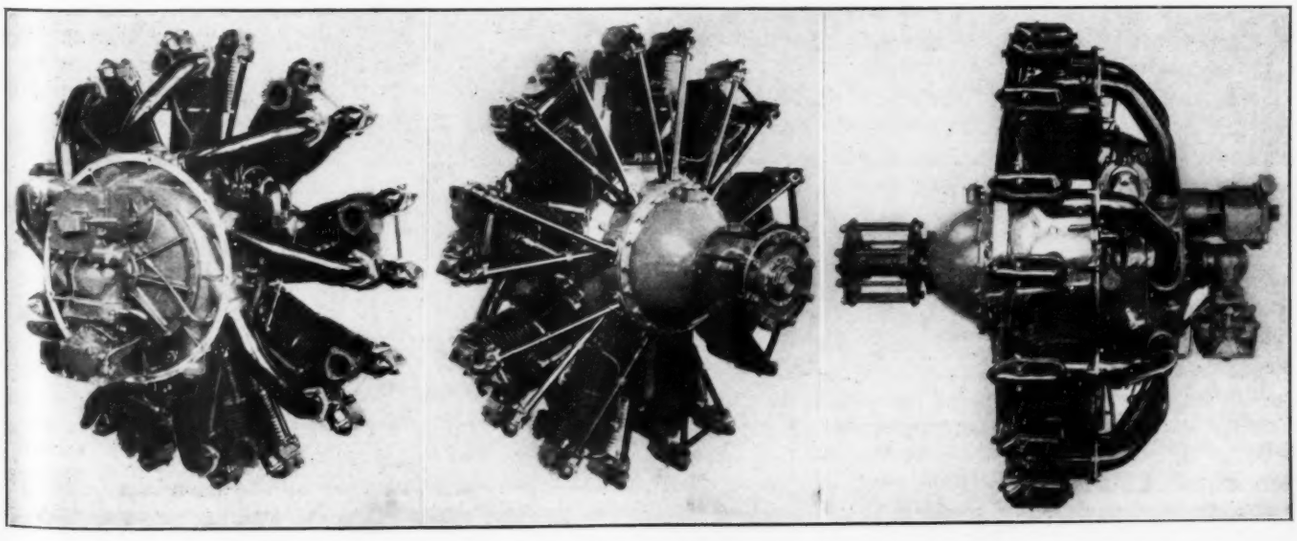
In Service Use

Through the use of a large number of units under service conditions it became possible to eliminate all causes of failure, and it stands today as one of the most reliable power plants that I know of. The cylinder is of aluminum construction, shrunk and threaded on to a steel sleeve, the holding down flange being integral with the sleeve. This construction is less costly than the method of forming the cooling fins in the steel barrel. Comparative tests made by us show so little difference in cooling as to be negligible. However, for larger engines, this construction is somewhat heavier than the steel fin type of cylinder, and the shorter aluminum head makes possible the setting of the valves at a greater angle to the cylinder axis, without the boring bar striking the cylinder walls and permits of better cooling of the exhaust port.

The position of the magnetos is somewhat unusual, but has much to commend it, especially on small engines, where the space back of the engine is rather restricted. On larger models, where the bolt circle for mounting is larger, the advantage of this position is less pronounced. With proper cowling design the magnetos can be given adequate protection in front and not interfere with the clean design of the airplane.

The master and link rods are of very sturdy construction, and the heavy section in the big end is responsible for the very excellent bearing conditions that prevail in this engine.

The limit of bearing loads and rubbing velocities has nowhere nearly been reached, but at the end of a full power run



Three views of the Wright P2 Cyclone engine

of 50 hours, at 2,000 r.p.m., the bearing showed practically no wear. A 50-hour test at 2,200 r.p.m. will be attempted shortly.

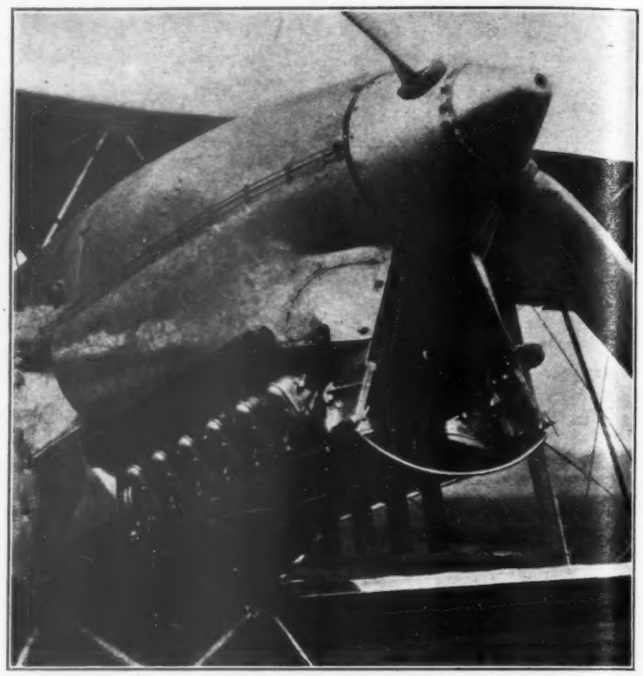
The induction system consists of three circular passages placed side by side, each one supplying three cylinders. These are joined by a manifold and connected to a double carburetor with a float chamber located between the two venturis, so as to maintain a constant level in all flying positions of the airplane. Somewhat higher mean effective pressure can be obtained with three separate carburetors, but the difficulty in service of maintaining the adjustment of three separate carburetor units, especially in the closed throttle position, leads us to believe that it will be worth while to design a triple venturi carburetor.

As can be imagined, in a power plant rated at 200 hp. and of very sturdy construction, the rate per horse-power will be somewhat high. In this case the weight is 465 lbs., or a ratio of 2.34 lbs. per hp., which, nevertheless, compares favorably with water-cooled engines of the same power, when the water and radiator are taken into account.

It would be impossible to cover the field of air-cooled engine development properly without touching on the work of Messrs. S. D. Heron, one of your compatriots, and E. T. Jones, both formerly of the Power Plant Section of the United States Army Experimental Station at McCook Field, Dayton, Ohio, and now engineers with the Wright Aeronautical Corporation. These men have carried on a series of single cylinder air-cooled engine tests, following up the work done during the war at Farnborough, in which Mr. Heron assisted. Much of this work has been published. So I shall touch only on a few points.

Valve Troubles in Air-Cooled Engines

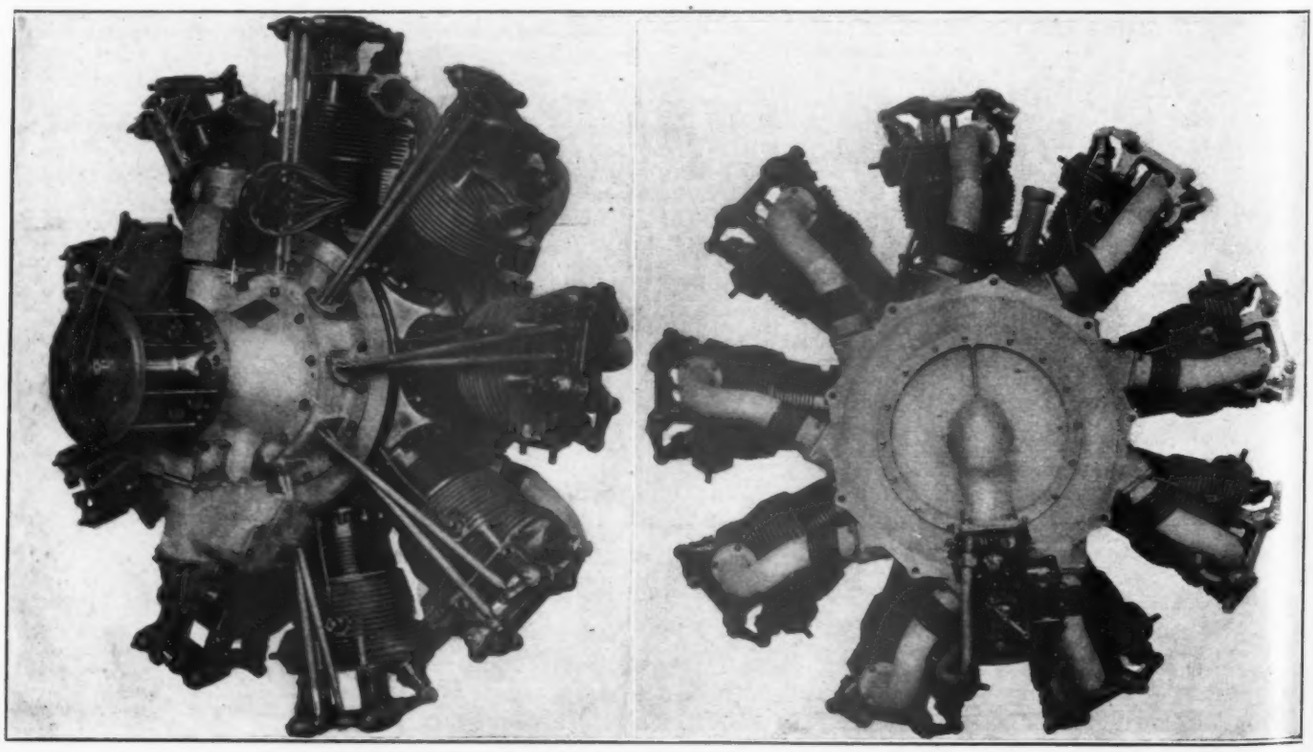
The most unsatisfactory detail of the air-cooled engine has been the exhaust valve and guide which, with conventional design, would not last more than about 25 hours at full power, in a cylinder developing 48 hp. The valves ran red at the junction of the stem and neck and finally failed at that point. The guides quickly wore out. A form of construction was developed with a file-hard tungsten valve, having a seat diameter of 2¼ in. and partly filled with salt, consisting of 45 per cent sodium nitrate and 55 per cent potassium nitrate (by weight), and running in a hard tungsten steel guide. The valve cooling was much improved and the hot zone was greatly reduced in area. After 100 hours of full power running, the last 50 hours being purposely under conditions of violent auto ignition, scaling on the neck of the valve was evident, but very little was observed on the stem. In the view on the right of the slide the condition of the valve after the test will be observed. The valve on the left is an unfilled



The Inverted Air-Cooled Liberty Engine installed in the CO-6 Observation Plane

valve after a 50-hour test. Due to a roller having been installed on the rocker tappet, wear on the tungsten valve guide was eliminated, although running entirely without lubrication.

These and other experiments in air-cooled exhaust valves have been very valuable, not only for air-cooled, but also for



Two views of the Curtiss R-1454 Radial Air-Cooled Engine

water-cooled engines, which often run considerably hotter than the valves referred to above. A practical application of the foregoing has occurred in the servicing by the Wright Aeronautical Corporation of a large number of unused Model E, 200 hp. Hispano engines, built by our company during the War. With slight modifications the exhaust valves are salt filled, giving the engines a life between overhauls three times as long as before.

Cylinder Experiments

Another interesting development has been carried on around a smaller cylinder of 4½ in. bore. One of these was made up of cast iron with surprising results. The cylinder developed 140 brake mean effective pressure, or 27.8 b.h.p., at 1,800 r.p.m. The temperature of the head at a point on the exhaust valve seat reached as high as 750 degrees Fahrenheit. Despite the high head temperature, excellent cooling was obtained with the salt-cooled valve, the hottest zone being in the middle of the neck about ⅜ of an inch wide and just perceptibly red.

At the conclusion of these tests the fins were removed from the cylinder and head and a water jacket welded in place. No difference in performance whatever was noted, but the valve cooling was somewhat improved, the valve running dead black. The cooling of this cylinder and valve, in either its air or water-cooled form, is the best example of valve cooling of which I have any knowledge.

One of the most interesting developments of recent years is the air-cooled Liberty, referred to earlier in this paper, and developed by Messrs. Jones and Heron. This is a most satisfactory power plant, developing 420 hp. at 1,800 r.p.m., but necessarily somewhat heavier than would be the case if it were a completely new design and not an adaptation, but nevertheless 200 lbs. lighter than the water-cooled Liberty with radiator and water. As 10,000 new Liberty engines are still in storage, and as the water jackets are beginning to corrode and become unreliable, the importance of this development from a commercial and economic viewpoint, as well as for its military value, is quite evident.

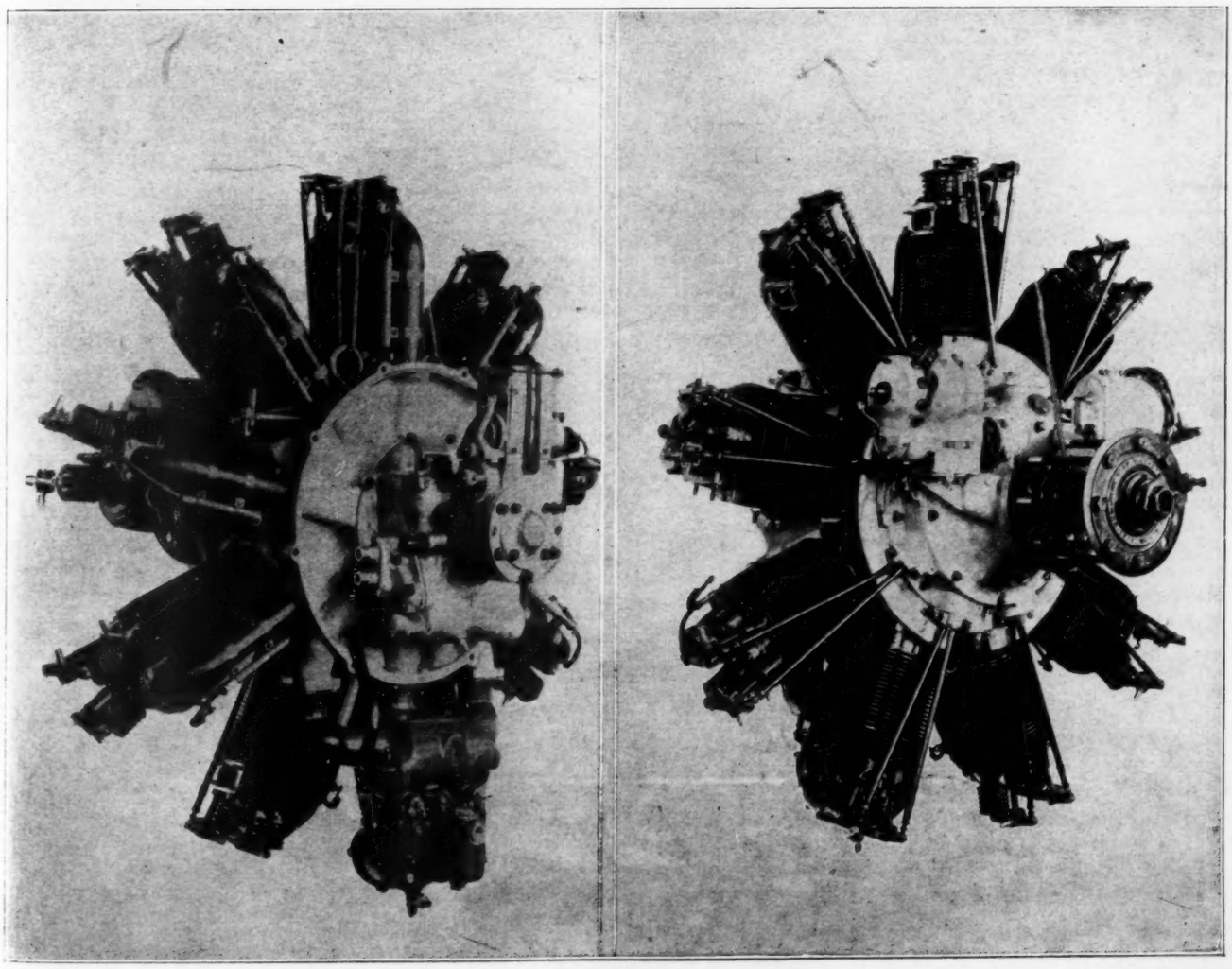
In order to obtain sufficient space between the cylinders for proper air cooling, it was found necessary to reduce the cylinder bore to 4.625 in. instead of 5 in. as formerly, and to get the power by higher mean effective pressure and higher revolutions. With the water-cooled Liberty 1,700 r.p.m. was the highest speed at which the engine could run satisfactorily, but with the lighter reciprocating parts and smaller piston areas of the air-cooled engine, speeds of 1,800 r.p.m. are satisfactorily maintained.

Barring a few minor changes, the rest of the engine, except the cylinders, valve gear, pistons and induction system, remains the same.

The cooling is obtained by means of a scoop, as in some of the early English and French air-cooled V-type engines, which provides easy means of shuttering in cold weather. The distribution of cooling air to the various cylinders is much less troublesome than was anticipated, no baffles or deflectors being necessary.

Supercharger Installation

An interesting and novel feature of this engine is the installation of a built in, gear driven, low altitude supercharger, which adds practically nothing to the weight of the engine. A similar supercharger, installed in a Curtiss D-12 engine, added five pounds to the weight of the engine, on account of



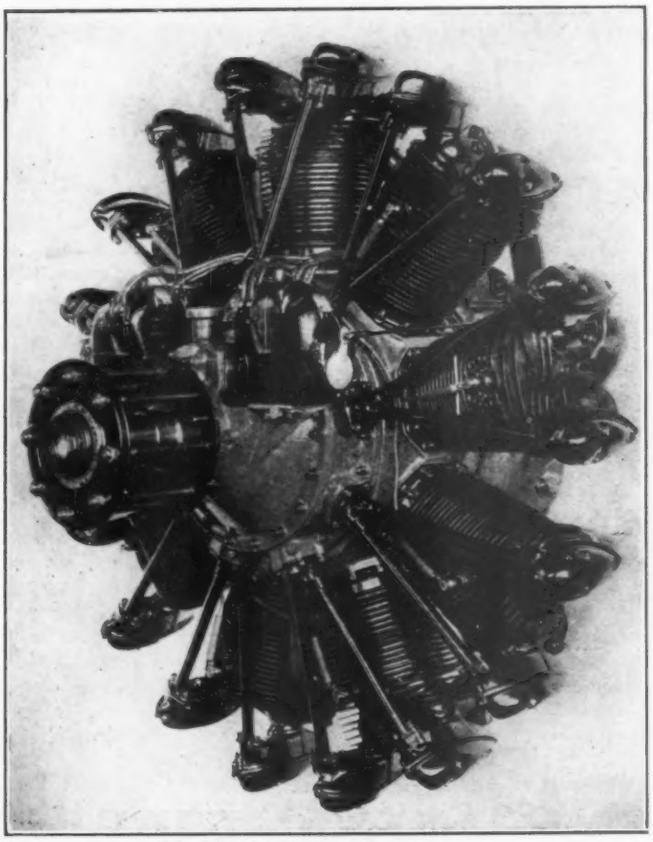
Two views of the 200 hp. Wright Whirlwind radial air-cooled engine

the quantity of parts that it replaced. As at present installed, this supercharger is nothing more than a rotary induction system, somewhat similar to the one used in your Armstrong-Siddeley engines, and from the point of view of distribution alone it is a very useful device. We believe that it will be possible to supercharge to altitudes of perhaps 10,000 ft., but so far we have only tested it in the air under conditions where a manifold pressure of two or three inches of mercury was obtained. The value of this type of supercharger, therefore, is as yet to be determined.

The foregoing, of course, refers to superchargers built as an integral part of the engine. This general problem of supercharging has received a great deal of attention and some highly satisfactory results have been obtained. The turbo and centrifugal types have been investigated by the Engineering Division of the Air Service, co-operating with the General Electric Company, while the Roots' type has been studied by the Navy Department in co-operation with the National Advisory Committee for Aeronautics.

The General Electric Supercharger

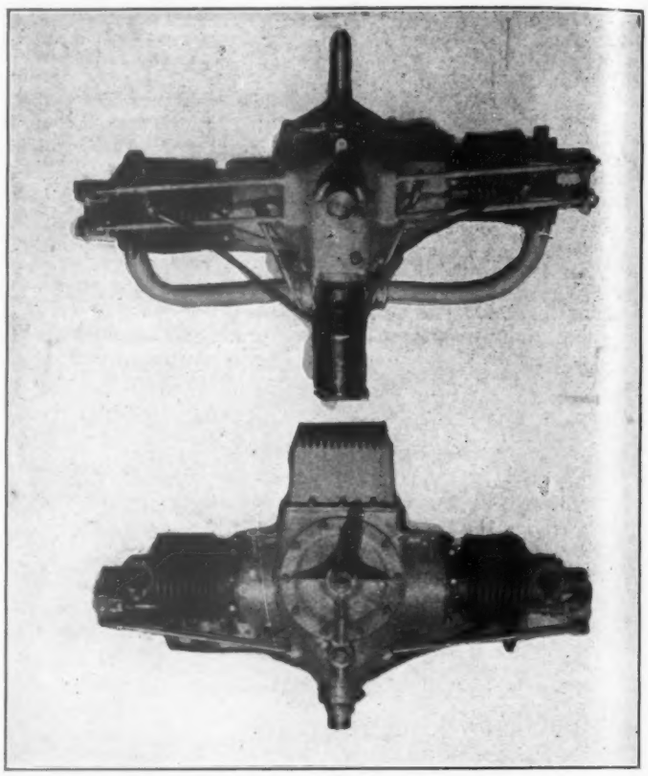
The General Electric turbo supercharger has been developed into a highly reliable and satisfactory piece of equipment. This supercharger is designed for application to engines of the 400-500 hp. class and has a nominal rating of 20,000 ft. However, by overspeeding, sea-level pressure may be maintained at the carburetors up to altitudes of 30,000 ft. In principle this supercharger follows the lines originally established by Rateau, but in the matter of arrangement and mechanical detail, it departs entirely from the Rateau design. The supercharger is located at the side of the engine, with the turbine on the exposed side for cooling. The compressor



The Wright R-1200 Simoon Engine

is located between the turbine and the engine, and the compressed air passes from the compressor through an air cooler to the front of the engine, thence into the Vee to the carburetor inlets. The air cooler is located directly in front of the supercharger, thus keeping the total projected area to a minimum. This type of supercharger is definitely past the experimental stage and is considered as a standard piece of service equipment.

Experiments with the geared centrifugal supercharger have been largely devoted to the development of a reliable driving train. While a thoroughly reliable and satisfactory design has not yet been developed, some very encouraging results have been obtained, and those directly connected with the development are confident that the difficulties will eventually be overcome. This type of supercharger will probably be developed with a moderate altitude rating (say 10,000 ft.), having the carburetor on the suction side of the compressor. The turbo type will continue to be used for very high altitudes.



The Wright-Morehouse engine. In the top view the engine is seen from the propeller shaft end, while the lower picture shows the engine from above.

The development of the Roots' type supercharger by the National Advisory Committee has been highly successful. A compact, reliable and rugged design has been developed, and this type promises to compete with the turbo type for altitude ratings of 20,000 ft. and up. This type possesses the advantages of mechanical simplicity and ease of control and, due to its moderate speed, the gearing and drive mechanism appear to offer no serious difficulties. The fact that this type does not lend itself to the arrangement with the carburetor on the suction side of the compressor would seem to give the centrifugal type the advantage for moderate altitude work.

An American Light Plane Engine

The only light plane engine in production in the United States is the Wright-Morehouse engine, designed by H. E. Morehouse and now manufactured by the Wright Aeronautical Corporation. This little engine is a two-cylinder engine of a type much more familiar to the British and French airplane industry than to our constructors in America. It has a cylinder volume of 80 cu. in., which is the standard in the United States for light plane engines, and has been designed for low cost production in quantities as much as for high performance. For this reason cast iron cylinders have been employed, with a rather flat head with some sacrifice of cooling qualities in favor of cheap production so as to be in reach of as many users as possible. Nevertheless, its performance is very creditable, brake mean effective pressures of 117 being easily obtained. The connecting rods are duralumin forgings, babbitted directly on the duralumin. Ignition is obtained from a single

two-cylinder magneto. In spite of the cast iron cylinders, the weight is not excessive, being only 88 lbs., and the horsepower developed is 30 hp. at 2,500 r.p.m., giving a weight power ratio of 2.93 lbs.

Three American Radials

There are three large radial engines being developed in the United States at the present time with satisfactory results. They are the Wright-Simoon, an engine of 1,200 cu. in., developing 350 hp., which has just completed a full 50-hour test at 1,800 r.p.m.; a Curtiss Radial, of 1,454 cu. in. and 400 hp., is now undergoing acceptance tests at McCook Field, and is almost ready to be put into production; the Wright-Cyclone, a 425 hp. engine, of 1,657 cu. in., with a bore of six inches and a stroke of 6½ in., is now undergoing acceptance tests for the United States Navy.

The enclosed valve gear will be noted in all these engines, due to the belief that the operating parts should be properly lubricated and the valve springs protected from spray when used in seaplane installations.

Failure of exhaust valve springs has often resulted from the sudden chilling due to spray from the floats or propeller. Another important reason for the enclosed valve gear is the ease with which an enclosed valve gear lends itself to compensation, a very important item if durability is a consideration. Wind tunnel experiments have shown that the gear on the top of an air-cooled cylinder offers considerable resistance and the gain in head resistance by enclosing these parts in streamlined boxes is by no means negligible.

As these last three engines are still in the development stage, I do not feel at liberty to give out any detailed information with regard to their design, but believe that the photographs which I am showing will be of interest.

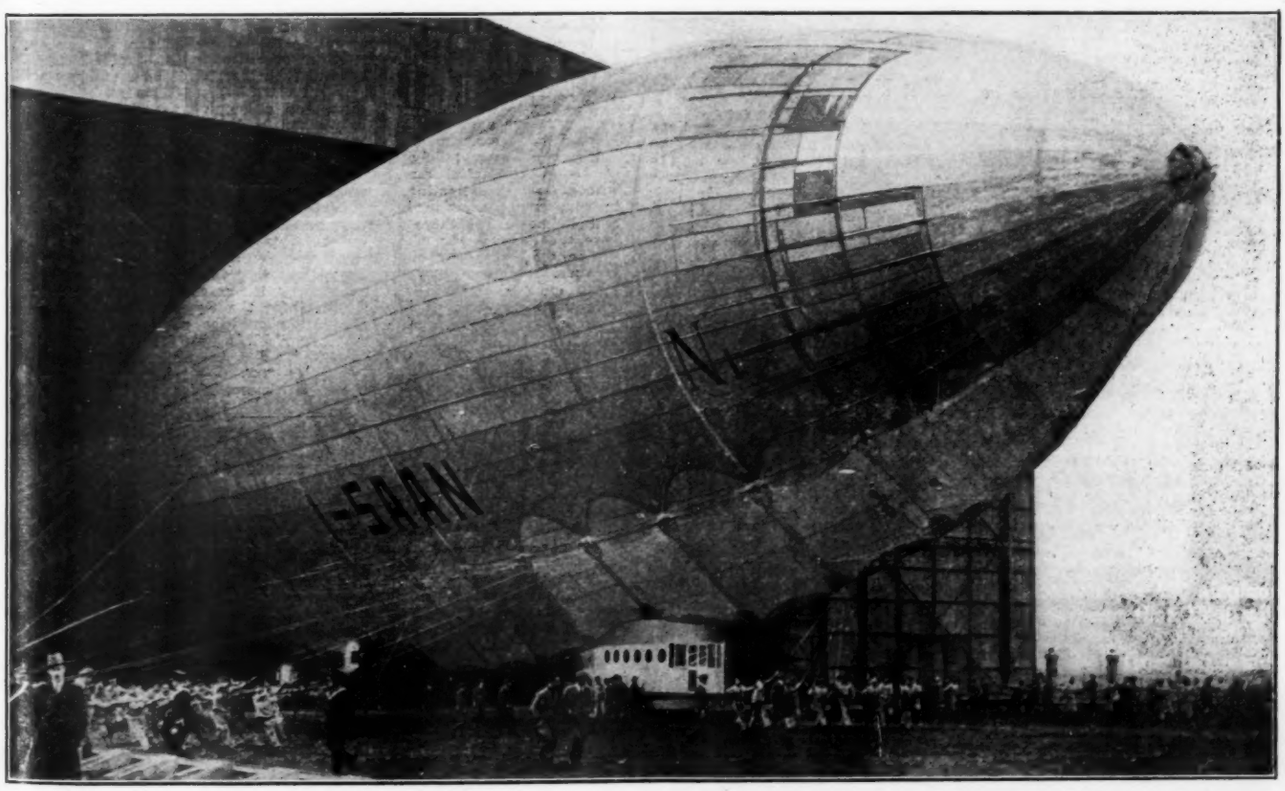
Another interesting development being carried on in the United States is the double magneto. In its latest form this consists of a magneto with a double armature winding, but having two separate breakers and independently driven distributors. Until recently there has been a very strong feeling against any system except complete dual battery or magneto apparatus on account of the possible failure of the drive as well as because of fear of failure of the apparatus itself. Successful magneto drive depends largely on lack of crankshaft vibration, and in our modern engines, both water-cooled and air-cooled, this trouble, at least for the speeds we now run at, seems to have been almost entirely eliminated. From a weight consideration alone the dual magneto warrants intensive study and development.

Summing up our tendencies in aircraft design, I should say that in the water-cooled engines we have standardized on the 12-cylinder Vee type, as close coupled as possible, of very rigid construction and with a rapid trend toward higher speeds of revolution.

Problems to be Faced

In the air-cooled field we have far from reached the ultimate type, but have at least put our cylinder cooling and valve troubles behind us, and are now attacking the problems of master rod and articulated rod construction that are involved in the tendency toward higher speeds of revolution. As I stated before, the air-cooled piston is subjected to considerably higher temperatures than the piston of the water-cooled engine and, on account of the motion of the master rod, much greater angularity prevails in a nine-cylinder engine, numbers 4, 5, 6, 7. This angularity causes greater side pressure on these pistons and the master rod piston also is subjected to special side pressure, due to the action of the other cylinders upon the rod. All these conditions must be met by a balanced design, which will maintain the outside diameter within as small limits as possible and yet provide satisfactory conditions for the operation of the parts just mentioned. The big end of the master rod must be given sufficient stiffness to permit of higher rotative speeds than are used at present. In fact, there are a number of problems still to be solved before the air-cooled radial will become as standardized as the water-cooled 12-cylinder engine.

The Vee type air-cooled engine, on the other hand, now that its cylinder and valve problems are solved, can follow the general lines of water-cooled technique and will, I believe, during the next few years become a very popular type wherever overall length is not the deciding factor.



The Italian semi-rigid airship Norge being brought out for a trial flight. It is in this airship that Amundsen hopes to reach the North Pole this Summer.

What Pilots Think About Air Legislation

A Final Selection of the Opinions of Those Against Regulation.

Now that the time is drawing near when Congress will take action on the question of air legislation, AVIATION *will stop the publication of pilots views on this all important subject. This issue and that of March 29 will, therefore, contain the last reprints of the many letters which have been received. This week, a selection of the letters of those who express opinions against air legislation is published, while next week, the selected views of those in favor of such legislation will appear, after which there will be no further publication of these opinions.* AVIATION *is deeply grateful for having had the opportunity of knowing and expressing the views of those most concerned in this problem and wishes to thank all those who have so willingly written in their ideas.*—EDITOR.

Difficulties of Travel By Regulated-Air

In this part of the country airplanes are still about as scarce as robins in the wintertime and when the drone of an airplane engine is heard overhead, people still rush out of doors and get their tonsils sun-burned the same way they did when Eugene Ely and Lincoln Beachy soared aloft in egg crates for 15 minute exhibition flights, back in 1910. I am wondering just what effect an airplane flying overhead will have on the populace after Senator Bingham's straight-jacket has been applied to civil aviation.

Just think of the time that will be saved by air travel, unless the aforementioned Bill is passed. If it is, try to picture how long it would take to fly from Birmingham to Memphis, after one's engine and ship has been picked to pieces by a government inspector and one has undergone the 609 examination, etc. According to existing government red tape, about three weeks. It takes a train seven hours.

I had the opportunity of visiting all the flying fields in Texas and Oklahoma during the past year and was surprised at the progress made by different civilians in improving the performance of war-time Jennys, Standards and T.M.'s by experimentation. I never heard of an accident resulting from any of these experiments and the performance of some of the planes was truly remarkable. If air legislation had been in effect, none of these planes could ever have left the ground because the builders could not afford to spend hundreds of dollars to conduct costly tests.

Let us alone, don't hamper us with strict regulations until the time comes, as Arthur Brisbane and other prominent newspaper writers fondly predict, when Henry Ford will have filled the ether with two-lung airflivvers so that the sky will be darkened as by the wild geese during migrating season.

FRANK ALEXANDER,
Atlanta, Georgia.

Says Congress Does Not Understand

We are very much opposed to federal regulation of aircraft operations at the present time, due to the fact that our Senators and Representatives in Congress are not well enough acquainted with our business at the present time. We have been operating nearly a year and have never had an injury to a passenger nor to a student, while in training or after he has completed his course. We trained over fifty students last year and have made a good start this year.

It is our belief that commercial pilots are becoming better acquainted with their business each year and are therefore taking less chances than ever before. The fatalities of 1925 were exceedingly small considering the amount of aircraft in operation and it is the writer's belief that they will be even less this year.

It has been suggested that all aircraft of war-time design should be condemned. This we think is ridiculous as there are a great many planes of this design which are safer for the new flier than later designed equipment.

We would have no objection to licensing pilots if the board passing on such matters was competent but to secure a competent board to act without prejudice would be a hard matter.

It is our suggestion that the government keep hands off until such time as they intelligently understand what they are trying to do.

E. E. PORTERFIELD, JR.,
Kansas City, Mo.

Regulation Premature

Commercial aviation in the United States today is in its infancy. To foist any regulations upon it of any kind at this time would be a detriment instead of a help, inasmuch as what small amount of commercial aviation we have, is due to the efforts of the small operators.

I do not think that regulations to hamper it should be passed. All of the regulations that could be passed would not stop accidents. Most of the small operators in this section of the country are using good equipment, i. e. Travel-Airs, New Swallows, Wacos, Laird Commercials and Laird Swallows. Junking the obsolete equipment as they are able to buy better ships.

Taking everything into consideration, I cannot see where any regulation will help us in any way at the present time.

DARRELL F. SHINN,
Elgin, Kans.

Rule Passenger Carriers Only

Whatever progress commercial aviation has made today in the United States, is due to the efforts of the small operators. It is to these operators, who started out in a small way and have developed the dozen or so companies which are building the ships that we are able to better our equipment such as the Lairds, Swallows, Wacos and Travel Airs. It is these types that the small operators are beginning to use and which are rapidly taking the place of the war-surplus ships, whose very age is rendering them unfit for future use. Time alone will dispose of this type of equipment.

It is doubtful if any kind of legislation would be helpful to commercial aviation. Let us have five years more of flying unhampered by any sort of legislation and then in time since everything must be regulated, I believe that this legislation should start with a law regarding the examination of all pilots who fly ships which are used to carry passengers on long or short hauls. To educate the public to "Know your pilot". How this should be carried out I am unable to say. If I were to say an examination at any army field, there would be opposition to this from the small operator in view of the treatment that has been accorded them by the Army at the recent national meets.

CHARLES K. LANDER,
Elgin, Kansas.

"We, Who Are About to Die"

The situation of the small operator in the face of Government regulation which is sure to come in some form or other, reminds me of the famous picture of Roman gladiator days, depicting the gladiators drawn up in company front, cheese knives at salute. The picture is labelled, "We, Who are About to Die, Salute You." Let the small operator have no illusions about this much vaunted Federal legislation which will saddle upon him a bureaucracy, replete with jobholders eager to so sew up the operator that he could never get off the ground with the load of red tape which will be his share. If any one questions the malicious operation of a federal bureau, let him examine the railroad administration during the late conflict, or better, read what Commander Kenworthy said about what has happened to the small operator and private owner in England, where the most efficient regulatory air organization in the world has done its best to get Englishmen into the air.

I feel that the most needed thing at the present is for every operator, small or large, to work for some sort of commercial operators association, and that this association agree on sensible regulations pertaining to inspection of aircraft, licensing of pilots and rules of navigation. These aerial Babbits, or Modocks, as Cy Caldwell calls them, have been doing entirely too much shouting, and the operator has been keeping quiet too long. The Modocks have their associations, but there is no association organized to unify the operators. Such an organization should exclude everyone except those who own and operate aircraft for profit or pleasure, and it should be chiefly a protective organization; to protect itself from dangers without, namely the Federal jobholder, and from dangers within, namely, the irresponsible operator. I class both of them as being equally destructive to commercial aviation, and although we will have to put up with a measure of the former, we can pull many of its teeth, by eliminating the latter.

The five year talkfest about federal regulation with its attendant attraction of capital and public confidence is pure bunk. Right now, without any investigating, I believe that there is as much capital tied up in commercial aviation in the States as there is in any other country, and I know that there is more commercial flying. Furthermore, I believe that the danger of the irresponsible operator has been greatly overdrawn. Babbits may cite figures showing a high percentage of crashes chargeable to the Gypsy but they forget that the gypsy is a cross-country pilot, and the dangers of cross-country flying are not present with the fixed base operator. I hold no brief for the Gypsy. He has done good work, but some of them I have seen should be eliminated. However, I believe the operator can eliminate the objectionable features of their business without asking for the blighting hand of the Federal jobholder.

W. D. TIPTON,
Baltimore, Md.

Believes Law Useless at Present

Your letter to commercial pilots in the United States regarding rigid regulation should be greatly appreciated by all of them and full endorsement given to the stand that AVIATION has taken to protect small operators.

With eleven years of flying, all but two commercial, I do not see how regulation would make our operators here safer, but as you say this must come sooner or later, only we should be careful that this Bingham Bill is not sent solo too soon and cause a crash that can be prevented by little more instruction. The present type commercial pilot is the most careful man in the world with very few exceptions and as a rule the longer he operates a plane the more careful he is, unlike men in other occupations.

A limit of solo hours in the air should be set for students before any pay flights of any sort are permitted. This one thing would prevent the most common cause of crashes at the present time. Old pilots of proven experience should be left alone and any regulation along the safety line should be applied to students only. Inspection of aircraft would be a good thing providing graft is not permitted and fairness assured.

FRANK MILLS,
Essington, Pa.

Says All Laws Will Harm

I myself and most of the pilots with whom I have talked think we are not ready for regulation of any kind at present. Any of the bills that have been or are now before Congress would do much more harm to civilian pilots than they could possibly do good. Civilian aviation in the real sense of the word, as we now have it, is far in advance of any other country. This is due entirely to the fact that it has not been hampered by restrictions of any kind.

The bigger share of the small operators depends upon student training and joy hops as one of the main sources of income. These are the two things that bring them over the top at the end of the year and enable them to keep going. They depend to a large extent upon the Jenny type for their equipment. If all the wartime Jennies were condemned tomorrow, the bigger share of the pilots would be out looking for a job. The old story you so often hear, that they could then find positions with the large reliable companies that would spring into existence is without foundation. Commercial aviation would have to make mighty fast progress to furnish all the Jenny pilots with another position. If they will let us fly the old Jennies for a year or so longer, we will be in a position where we can equip ourselves with the up-to-date planes now on the market. If they don't, a lot of us will have to find other means of earning a living besides flying.

I am opposed to air legislation of any kind at present. But I suppose we will be regulated in spite of what we do.

I am of the opinion pilots should certainly form an association of their own, composed entirely of pilots and operators and controlled by them. Then perhaps they could all get together and make enough noise to be heard. As it is, very few outside the flying fraternity realize how many private owners of airplanes there are.

CHAS. E. ROBINSON,
Metamora, Ill.

Suggests Fliers' League

I am not an airplane pilot, —therefore I might be considered better qualified to offer advice than if I were an "ace," on the principle that if you want to raise children properly, you should seek the advice of a maiden lady. Well, thus qualified and speaking in the capacity of a pioneer balloon pilot, I am prompted to say, —UNITE!

Organize, by all and every means. By this I mean particularly, organize into a "Fliers' League" for the purpose of concerted action, and pledge yourselves individually, as members of said league, to join every other kind of an Aerial Association (Armchair, Tatting, etc.,) in your individual localities—to find out what all other interests are planning against your interests. (Beware the limiting qualification "Professional Pilot.") A "Fliers' League" can gain adequate power only through numbers, therefore must enroll the general public, embryonic fliers, etc.

Unless there gets into immediate and sustained action, an organized FLIERS' LEAGUE, eternally watchful, vociferous, aggressive, and consecrated to the principles of individual liberty and public welfare, as opposed to private or corporate privilege.

All of which might be summed up in direct answers to your questions. "Do we know what we want?" Yes! We want a belligerent fliers' organization. "Do we know what we do not want?" Yes! We do not want aerial legislation enacted unless it carries the endorsement of a fliers' organization, and we do not want "exclusive airway franchises given to any individual, corporation, or association.

The airways must be free to all.

JOSEPH A. BLONDIN,
Los Angeles, Calif.

The Example of Others

I am highly in favor of letting commercial aviation advance at will. Commercial aviation has advanced more in the last 12 months than any other line of transportation ever did in that length of time.

I learned to fly in the Marine Corps at Quantico, Va. I was discharged November 3, 1924. When I came out to Santa Cruz, Calif. there were no planes there at all. In the early spring, Floyd Kilso came with a Standard, and I bought a New Swallow. We did well there during the summer, carrying passengers in the fall or latter part of the summer. Floyd took on a class of students. Now some of them are carrying passengers throughout the country. The others took it up as a pastime. Out of the fourteen (I think) none have crashed due to not knowing how to fly.

It looks to me that the result of England's commercial aviation should be enough. We should stay away from that for a while at least.

If we have any regulations and laws, they should be Federal, and governed, as well as made, by fliers.

R. B. PATTERSON,
San Jose, Calif.

No Laws For a Few Years

I am opposed to any legislation on aviation at present. I believe that in 1925 more was done to advance aviation in the United States than any other year. The more pilots we have in the United States, the stronger our Air Force should we have another war. If these students at the time they decided to learn to fly had had restrictions placed on them, they would have passed up the game, and not be fliers now. Let aviation alone for a few years and I think the United States will lead the world in pilots, airplanes and motors.

PAUL NEFF,
Iola, Kans.

Laws Will Stop Operations

I am constructing a forty acre field at Rugby, Tenn. and expect to operate in the Spring. I am strongly opposed to any air legislation as it would in time put the small operator out of business.

I suggest an organization be formed of fliers and operators and that this organization ward off any laws that would tend to hamper the fliers of this country. All fliers should take warning of the legislation in England, for if let alone our own legislation will certainly go in that direction.

HERBERT M. TOOMEY,
Helenwood, Tenn.

Believes Regulation Useless

I do not favor strict regulation of privately owned airplanes. I cannot see how a lot of laws and inspectors can have any effect on a pilot's own judgment while flying. It seems to me that accidents must often occur in commercial flying, on account of poor judgment on the part of the pilot at some crucial moment.

I think what we need most is more landing fields throughout the country and better cooperation with the business man. The general public will use the airplane as a means of transportation just as soon as they become acquainted with that mode of travel. The average person needs only a few rides in a plane to be convinced of the reliability of the thing. So, I think we should be very careful of the laws that we impose upon the small operator, for it is he, who is educating the people to the way of airplanes.

If we can get legislation that will help acquaint the public or influence more and better landing fields without great expense to the operator, it will be mighty fine.

CLYDE E. SHOCKLEY,
Kokomo, Ind.

Says Bill Will Destroy Flying

The writer is an aviator of some two years experience during which time I have kept in touch with the various movements in this field and wish to state that while I heartily approve of plane examination and tests for pilots, I am absolutely opposed to the Bingham Bill for the reason that I believe it will be a hindrance to commercial flying. I might add that I firmly believe that it will practically destroy commercial flying.

We, the sportsmen of the U. S., through the aid of *Field and Stream Magazine*, defeated a proposed bill on small arm regulations and I believe that if every Aviator in addition to writing his views to AVIATION would write his Congressman this bill could be defeated.

I feel the need of a field in localities, where planes can be inspected and be passed upon by experienced mechanics and pilots, also where pilots could be given certain tests, but I do not feel that the Bingham Bill will take care of this need. Commercial flying should be fostered and promoted by the government but such bills as the Bingham does none of this and should be heartily voted down.

PAUL B. SHAW,
Cedar Rapids, Iowa.

Would Hamper Fliers

The real commercial fliers do not get much credit for the pioneering in aviation. The Gypsy fliers are the ones who have really kept aviation alive during the past few years and I feel that they should not be hampered. I believe that pilots should be licensed for a small fee, and have two grades of licenses at least; one to expert or capable fliers permitting them to carry passengers, and one to the inexperienced, allowing them to fly their own planes, (to carry freight, or for sport) or any plane which an owner will let him, but not carry passengers.

There should be an inspection of planes, but not too rigid, condemning only the worst of the crates, as I believe more accidents have happened to first class airworthy ships than to the crates of the Gypsies. I believe that the public is becoming a good judge of airworthy ships as I know that when we had an old "battle axe" we got very few passengers, and not many pilots are going to fly unsafe planes, if they know it. The main thing is to keep the students from hauling passengers.

F. B. IRVINE,
Linton, N. D.

Regulations Would Retard Flying

As sure as the sun rises and sets, strict government regulations will retard commercial aviation ten or fifteen years, if not kill it entirely.

Imagine the automobile, with strict government regulation, would it be what it is today? It certainly would not. If you hinder the small man from starting and growing, you stifle competition which is the greatest foster of development and advancement.

If the regulations are made too strict, it will not only be too expensive but it will frighten the amateur pilot from using the airplane as a means of pleasure and rapid transportation.

In hindering the public from using the airplane, you will not only kill the progress of the airplane but it will kill the advancement and development of the airplane manufacturers. Instead of growing to be one of the country's great industries and giving employment to thousands of people, it will be a little struggling industry, trying to keep its head above water.

Hindering the public from using the airplane will greatly retard the progress and development of commercial aviation. The public use of the airplane will greatly reduce the fear and uncertainty of the coming commercial airlines. If a man's neighbor or friend has a plane or he sees planes passing overhead very often during the day or night, when he wishes to go to some other city, he will not hesitate to travel by plane.

A certain amount of regulation by the government will not hinder progress. Below are all the regulations necessary at the present time.

1. Registering of all planes at a charge of not more than $15.00 a year.
2. Require all pilots to have government licenses "but issue them in classes."
   a. 90 day students' license (not permitted to carry passengers.)
   b. 1 year amateurs' license (may carry passengers but not for pay.) (A charge of not over $1.00 should be made for the above.)
   c. One year commercial pilot's license, allowing the holder to pilot any commercial aircraft. (A charge of not over $5.00 should be made for this.)

The non-commercial pilot should be required to have 30 hours flying time, 5 hours of which should be cross-country flying. Also be given a landing and take off test.

A commercial pilot should be tested more rigidly. He should have at least 200 hours flying time, and 50 hours of which should be cross-country flying. He should be tested as to his ability to make dead motor landings from different altitudes and different positions from the testing field. He should know a fair amount about navigation. His eyes and heart should be tested before license is issued or renewed once a year.

I do not believe it is necessary to have government inspection of aircraft. Yearly inspection is ample, if inspection is deemed necessary.

ERIC THEIS,
Philadelphia, Pa.

The Cyfibbian Contest

Winner of Silk Helmet Shows Marvelous Qualities of Mystery Plane.

AVIATION *submits several of the letters received by the Cy Caldwell Airplane and Baby Buggy Co., Ltd. in the Prize competition for the pair of ladies' silk hose suitable for a pilot's helmet. The winner, with understandable modesty prefers to hide under his Modock signature. It is hoped that his Langley Field address has nothing to do with it. The sky blue pair have been sent to him. May they bring him good fortune.*—ED.

Winning Effort

Development: This startling new development is not even an experimental model, but was designed for several specific purposes. Choose your own! Many timid souls would like to fly if they might keep one foot on the ground. The Cyfibbian is designed especially for such folks. Its construction renders it supreme for low altitude work. For wing walkers it can't be beaten. Not only is there plenty of room but it would be next to impossible to fall out through the mass of wires and struts provided. For Arctic expeditions it comes into its own. One might leave it there for years and have no fear of loss due to deterioration.

Successes: As predicted, it will sweep the field for the next Collier Trophy. All other contenders are advised to park miles away to avoid the grand sweeping take-off. The Cyfibbian will mount all obstacles.

Safety: The solid brass bar construction of the Cyfibbian makes this machine the safest in its class. No buckling of thin tubes is possible. The brass renders it proof against corrosion, either internal or external. All wires and struts are doubled several times. Thus, failure of one does not cripple the Cyfibbian. Similarly all supporting surfaces have likewise been applied in multiples. It will be noted in the illustration that two buffers extend on each side of the cabin. These are equipped with special aquatic shock absorbers. In case of a tripped landing, they will protect the propeller from damage.

Performance: The machine's performance (if any) should be remarkable, since it is equipped with but a single "Spitfume" motor (OX5). Its speed range should excel anything ever dreamed of. It can be landed vertically (zero forward velocity.) If you divide its maximum speed by zero, the ratio will be astonishing.

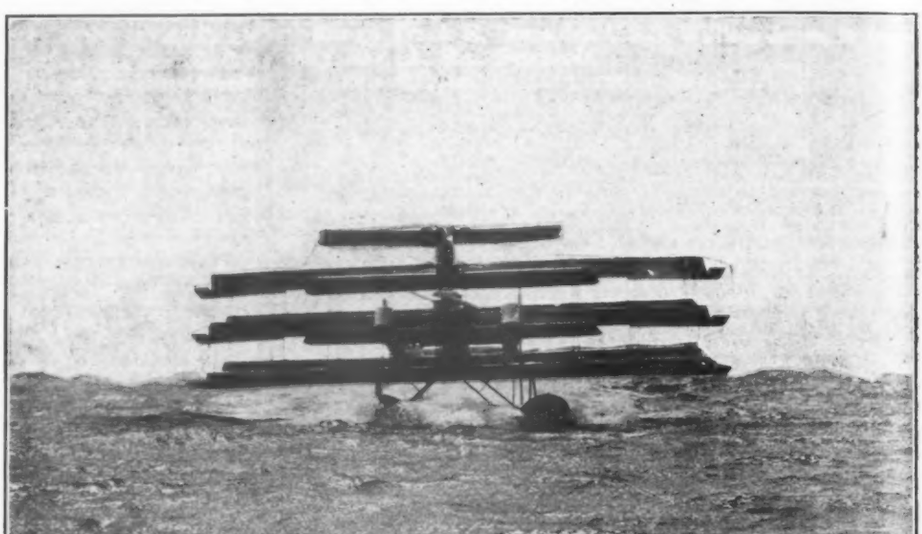
Earning Power: In our present enthusiasm we dare not predict the earning power of the Cyfibbian. It would not do it justice, we fear.

Construction: Aside from the solid brass construction already noted, there are a number of interesting features. All joints are soldered. This will render it possible to make all repairs on the field. Only a small radio soldering iron is necessary to keep it sufficiently assembled. The divided type landing gear makes it possible to straddle small boats and barges when taxiing in the attempt to get off. This should save many miles of needless travel.

Fire Risk: Due to the multiple construction, this fire hazard has been eliminated. Many parts could be completely destroyed and never missed. Having but a single engine its fuel capacity will be small. The tough canvas coverings of the fuselage and wings are thoroughly soaked in red lead to prevent fire spreading.

Take off: The take off is gradual (very) and would not frighten even the timidest soul. With the great number of large bays and oceans along our coasts the Cyfibbian should come into popular favor.

Landing: The alighting is as marvelous as the take off. From low altitudes it is possible to alight vertically after having reduced its forward speed to zero.



Official Photo by The Modock Airescapes, Inc.

The Cyfibbian

Economy: Projecting slightly beyond and behind each wing tip are small airfoils. These absorb the lost energy that is known as "Tiplosses". It is but reasonable that to promote economy we must watch these little details. Tip losses have long baffled designers. Here is our solution. Color scheme is a greatly neglected phase of economy. Few engineers understand that when a wing is painted in yellow its minimum drag will be reduced, likewise that gray will greatly hinder the wing's progress. In the Cyfibbian this has been cared for. The top of the top and the bottom of the bottom wing are of a brilliant yellow. Of course one hardly dared to paint the internal surfaces similarly for fear of dazzling the pilot.

Motor Mounting: To speed up motor maintenance we have devised a novel mount. It is only necessary to draw a single pin and the motor falls into a waiting truck and is rushed to the shops for repairs.

Accessories: All seat cushions are pneumatic and pressure gauges on the dash indicate to the pilot how to balance his machine. Spare gauges are standard equipment. Thus, if wheels are substituted for our trick float system, the lines may be connected directly to the spare gauges. The gauges are of continuous reading type and should require no attention from the pilot. The hyrdopneumatic pontoons are considered

an accessory since they are not needed in flight and can be deflated.

Data: Not as yet available but will be published as soon as possible.

A. Jay Modock.

Second Entrant—The Cyfibbian's History

In line with your published request for information on the new CYFIBBIAN ship of The Cy Caldwell Airplane & Baby Buggy Co., Ltd., I wish to present in the following paragraphs a brief summary of the many hardships and misfortunes experienced by the small but efficient corps of hearty engineers who undertook the design and construction of this wonder ship, together with many technical features of the construction never before made public.

On January 14, 1925, in response to an urgent appeal broadcast by Mr. Caldwell, (Allah be praised) from station WAWA at the baby buggy factory, there were gathered together in a small room of a New York club various persons, each with more or less aeronautic experience (the less the better,) who were anxiously awaiting Cy's announcement of his latest scheme.

At length, overcoming his inherent modesty, Cy arose from his red plush throne at the end of the room and stated briefly his reasons for calling the meeting, and his wonderful plan. He told us his idea was to build a new ship of radical design; a ship that would startle the world and thereby revive the lagging interest in aviation. But personally, I think his two dominant thoughts in the matter were to build a ship that would (1) actually give a pilot a thrill, and (2) make all the gingham-dress beauties of the quiet Southern towns look upon the pilot as a divine being, (as once they did.) Now in February, 1926, the ship is built, and it has accomplished all of these things. Everybody who flies the ship gets a thrill; and the pilot certainly is divine. No mortal could fly such a crate.

However, that is getting ahead of my story. In order that you may better appreciate just what went into the building of this mystery ship, I will give you a brief resume of the construction.

It was decided to build the ship in the Sahara Desert for two reasons, namely, to avoid the possibility of any investigation of the project, and in order to assure an abundance of grit. So, on February 3, 1925, we sailed for Africa; and within a month were established in our new quarters. A few days later preliminary designs were made, followed by many arguments; then the final designs were made and construction started.

The propeller was made first, and anchored in the correct position to a convenient palm tree. After this the motor was added. This motor is a decided advance in engineering. It's lubrication is accomplished by smooth talk only. However, we could not use hot air for fuel, instead of gasoline, since the chemical analysis showed the former to contain no useful energy whatever. This was a great disappointment.

Next, the fuselage was built around the motor. Then the wings were added. For some reason or other, the mechanics built four more wings than the design called for. These we added at various points, and the beauty of the ship was greatly increased. Finally, it was decided to add the tail surface. Perhaps it is just as well. But Cy was of the opinion that the ship would fly equally as well without it. Since viewing the test flights I am inclined to think he was right. But anyway, that is immaterial; like fog and high tension wires.

One point I forgot. Just before the final assembly of the ship, we were invited to the domain of a sheik, and were agreeably entertained by his Egyptian dancing girls. They made quite an impression, which it seems, was reflected in our work on the ship. Anyway, the ship vibrates alarmingly at times.

When the time for the tests came we were greatly distressed, because there was no lake or river near on which to give the plane her water test. Cy was desperate, until he finally happened to remember that someone said in the Bible that if one had faith enough a mountain could be moved. This, it seemed, should apply equally as well to a lake; so starting one day at sunset Cy prayed beautifully all night for a lake on which to test the CYFIBBIAN. Finally, after many weary hours the dawn came; and just as we expected, the lake was not there.

Right when everything was ready for the first flight (to find water) it developed that the propeller had been made backward, i. e., it turned the wrong way and pushed. However, by a secret, yet simple, formula one of our engineers (present address Cumberland Hospital for the Insane) solved the problem; and the ship flies very well tail first.

Perhaps you are wondering why the CYFIBBIAN is called the mystery ship. The reason is simple; it is a mystery to all of us how and why it flies.

Specifications

Following are brief specifications and dimensions:

Span	Twice the length.
Chord	5 ft., more or less.
Length Overall	Half the Span.
Stagger	½ of 1 per cent.
Weight Empty	Light.
Weight Loaded	Heavy.
Cruising range on 50 gal.	Right smart distance.
Cruising range on 25 gal.	About half that far.
Horsepower	122 Modocks, in series parallel.
Maximum Speed	Fast.
Cruising Speed	Not so fast.
Landing Speed	Slow.
Price	Fourteen, eighty and a horse blanket. Used kiddie cars taken in on trade.

P.S. Especial attention is called to the weekly magazine, FLYINITIS, published by the Cy Caldwell Airplane & Baby Buggy Co., Ltd.

Subscription rates:

1 Year—Nothing.
6 Months—Half Price.
Single copy—Free.

On sale every Thursday at Custer's Last Stand.

J. C. Columbus,
Paintsville, Ky.

Third Heat—Tests Satisfactory

Aviation interest has been centered around a new monstrosity developed and fabricated by that famous personage, Cy Caldwell, President and chief designer of the Caldwell Airplane and Baby Buggy Co. Ltd.

The new plane is built around six aircooled OX5 motors of the radial variety. The motors are sprinkled here and there in the out of the way places along the wings, making the ship especially adaptable for wing walking, dancing, parachute patching and other acrobatics. Inasmuch as all six motors may be cut out without reducing the performance of the plane, it is extremely stable.

An innovation in landing gears makes it possible for the plane to be landed on land, water or sea. The regular pontoon type of landing gear is used for water and sea but Engineer Caldwell has done away with the rather inefficient type of wheel undercarriage now in general use of land planes. The pilot in the new machine simply points the nose of the plane down when he wishes to make a landing on the ground and lets nature do the rest.

A spacious cabin accommodating between five and six passengers is located in the fuselage. Seats are so constructed as to right themselves in case of bad "nose-overs" and the like.

One and one-half inch steel bar is used throughout, giving the plane a particular rigidity peculiar to Caldwell's creations. As no pilot is needed for guidance, no cockpit is provided. The maintenance of the course is accomplished by phonographic record control,—a recent development of Caldwell's. The ship is a particularly good fire risk. It is equipped completely with fire and burglar alarm systems. Radiators for the aircooled motors are dropable in flight as are all six of the motors, thus reducing the fire hazard to the minimum. Caldwell is now working on a scheme by which the entire machine can be dropped in flight, thus eliminating the fire hazard altogether.

Recent exhaustive tests by various pilots have proved the plane to be absolutely air and seaworthy. Lieut. Len Un-

derdunk, Captain Obnoxious, and Lieutenant Major Whoosit are among those who consider it to be in a class by itself. Casey Jones claims that with a five hundred pound load and with Mrs. Jones and family (Mr. Jones has five children between the ages of 5 years and 40) in the cabin, that his take off was only some three or four miles,—a really quite remarkable performance. Lieut. Len Underdunk has not recovered sufficiently to make any statement regarding the ship other than the one mentioned above. However, Lieutenant Underdunk claims that he will use a parachute after this when testing any of Caldwell's planes.

F. L. Snavely,
520 Chever St.,
Ann Harbor, Mich.

Fourth Runner-up—A Protest and Warning

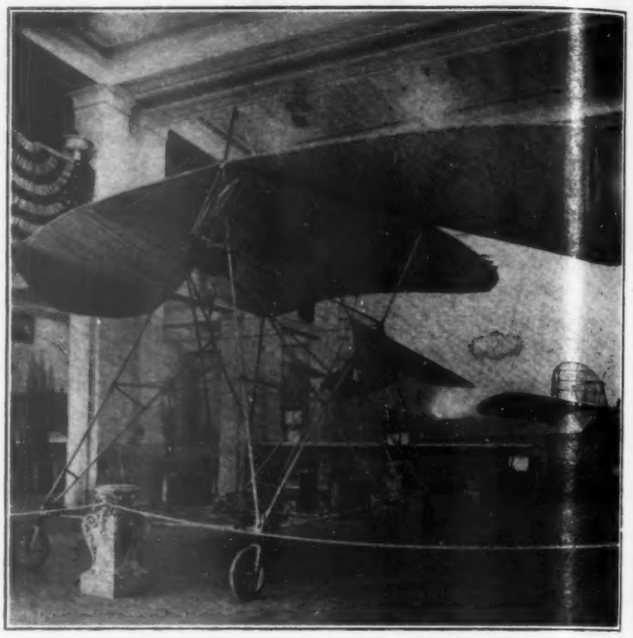
I noted in your issue of February 8th an advertisement of The Cy Caldwell Airplane & Baby Buggy Co., Ltd. I am indeed gratified to be able to welcome to the ranks of the airplane industry an experienced manufacturing company, even though baby buggies may have been their principal product heretofore.

Upon considering the matter, however, it is obvious that there is much in common between the baby buggy business and the production of airplanes,—they both have to do with an infant industry, for instance. It is notoriously easy to take money from a baby, which may explain the financial ability of this new entrant in the aero sweep stakes, to take full page advertising space in your esteemed journal.

It is, therefore, with great reluctance that I bring to your attention facts which will undoubtedly close your advertising columns to this baby buggy airplane company, unless it meets the terms and conditions of my client, Mr. Horatio T. Bott of Center Ridge, Ark., who is, I am prepared to prove, the original inventor of the Cyfibbian. It was indeed a pleasure to note that this wonderful design is finally receiving the appreciation that its many sterling qualities and originality justified.

As one of the few surviving pre-war, pre-Volstead Consulting Aeronautical Engineers, may I state that it was my professional privilege many years ago to assist Mr. Bott in the design and construction of the progenitor of the Cyfibbian. To substantiate this fact, I am enclosing two photographs showing the preferred construction at that time of two of the principal models.

You will note in the "A" model design the wing walking possibilities are even superior to that shown by the Cyfibbian and could, in fact, be used for demonstration of the Charleston at any altitude, which under modern conditions will insure a ready market for this particular design.



Model B—The Escalator Plane

In the model "B" type, the need of escalators is quite apparent. Otherwise the motors would be entirely inaccessible. This, to my mind, shows that this important feature of the Cyfibbian was anticipated in Mr. Bott's structure.

Mr. Bott has instructed me to negotiate with The Cy Caldwell Airplane & Baby Buggy Co. Ltd., looking to their use of his designs, and has intimated that in addition to the conventional "eross licensing agreement", he will consider a stock interest in the parent company of approximately One Million Dollars, or in the event that a cash settlement is preferred, Mr. Bott will consider a two year extension of his

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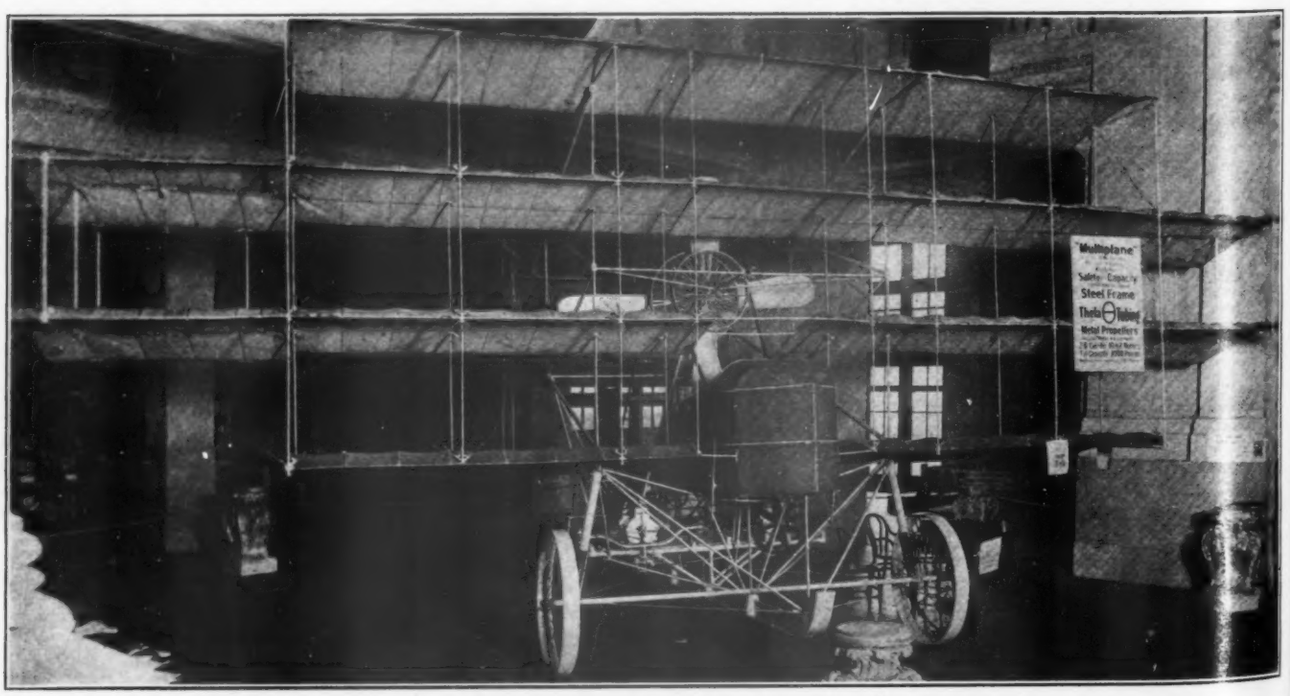
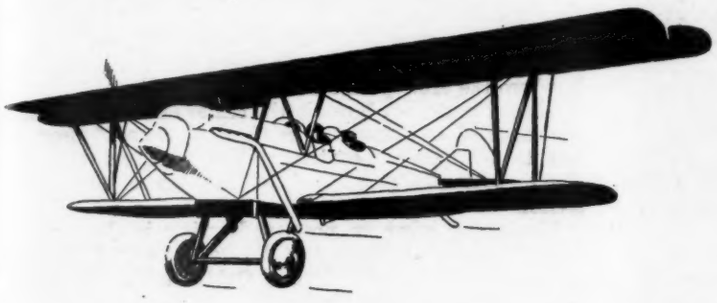


Model A—Projenitor of Cyfibbian



THE OX5 TRAVEL AIR

FOR GENERAL UTILITY PURPOSES REQUIRING HIGH GRADE PERFORMANCE, EASE OF CONTROL, QUALITY, AND SERVICE.

PERFORMANCE WITH 600 LBS. USEFUL LOAD:

HIGH SPEED	100 m.p.h.
LANDING SPEED	38 m.p.h.
SERVICE CEILING	10,000 ft.

PRICE, $3,500 FLY-AWAY WICHITA.

TRAVEL AIR AIRCRAFT 3-PLACE SERIES

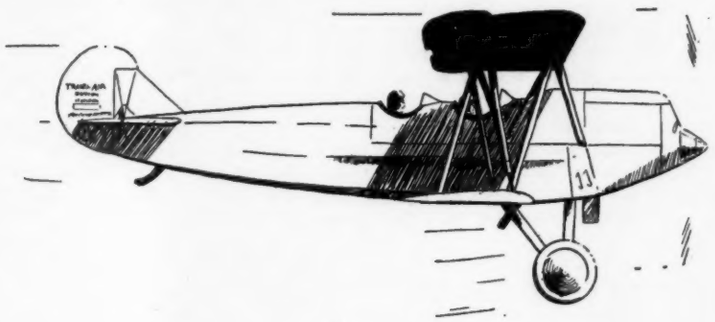
THE C6 TRAVEL AIR

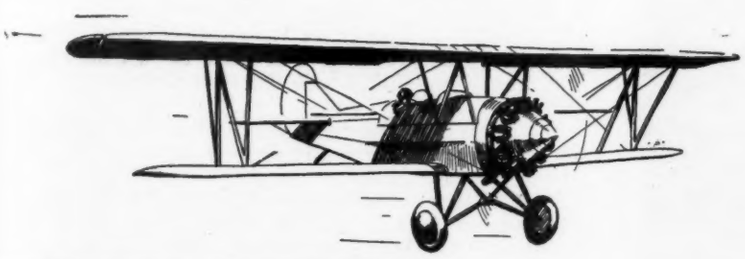
FOR PHOTOGRAPHIC AND EXTENSIVE CROSS COUNTRY WORK.

PERFORMANCE WITH 600 LBS. USEFUL LOAD:

HIGH SPEED	121 m.p.h.
LANDING SPEED	41 m.p.h.
SERVICE CEILING	17,300 ft.

PRICE, $7,150 FLY-AWAY WICHITA.





THIS MODEL ALSO SUPPLIED WITH HISPANO MOTORS.

THE WHIRLWIND TRAVEL AIR

FOR HIGH CLASS SERVICE DEMANDING A RESERVE OF POWER, MAIL LINES, DUSTING, EMERGENCY TRANSPORT, ETC.

PERFORMANCE, WITHOUT COWLING, WITH 600 LBS. USEFUL LOAD:

HIGH SPEED	128 m.p.h.
LOW SPEED	38 m.p.h.
CEILING	20,000 ft.
CLIMB to 1300 ft.	1 min.
CLIMB to 10000 ft.	12 min.

PRICE, $9,500 FLY-AWAY WICHITA.

WE SOLICIT CUSTOM MADE AIRPLANES.

TRAVEL AIR MFG. CO.
Manufacturers of 'Travel-Air' Planes
INC
WICHITA KANSAS

LET US KNOW YOUR SPECIAL REQUIREMENTS.

subscription to AVIATION, as an equivalent cash equity to the stock certificates indicated.

Will you please bring this matter to the attention of your advertiser, The Cy Caldwell Airplane & Baby Buggy Co. Ltd., and advise me what they propose to do in connection with this matter.

E. R. ARMSTRONG,
Wilmington, Del.

The First Order—An Airhearse

I have noticed your new Cyfibbian which you are putting on the market and am very much interested in same, as I feel that it's just the ship I have been looking for. Am in the market for one dozen ships, must be equipped with sun parlors, bath, self stopper, and sky hook. It is a fine ship no doubt for funerals, that is, it will produce some, especially with an OX5 installed. As I figure, it's too powerful a job for the size of the ship. I understand the wing spread is 211 ft. I can use an airhearse for classy snappy funerals, especially for moonshiners, as they like to go like lightning.

Being a licensed embalmer, it won't be so hard to get on to the controls of your wonder ship. Can you send me a sample of same via parcel post? Be sure it is sent airmail, so I can razz someone if it is ten minutes late on a cloudy foggy day. I understand no parachute need be worn in your ship as the storage battery is detachable in an emergency and can be attached to pilot's belt so that he won't drift when he jumps for his life.

Can it be landed on a flag pole with hands off the stick? This is very important for me to know as on the airhearse I intend to have a trapdoor under casket compartment, so that when stopping on top of a flag pole at Cemetery I can pull lever and drop casket to ground so that it buries itself thus saving grave digging expense.

I will be pleased to be your Chicago agent, as I have a flag pole which can be used for mooring mast, also a soft coal yard nearby which will make an excellent landing field whenever ships need attention, as the wheel base will not get rusty in landing on soft coal.

For references, I refer you to the World Fliers who I placed in my 2 cyl. Lawrance Bomber, one cylinder on each side of the foosaloke. Oh, by the way, can the Cyfibbian go backwards, or in auto language has it a reverse stick? Hoping I am the first one from this quiet city to apply for agency, I am,

E. M. BALMER,
Chicago, Ill.

The Aero-Hydro-Alluvian

The Cyfibbian is a new type of "aero-hydro-alluvian" canard multiplane. Its outstanding feature is that it can and will, without any cause whatever, fly either forward or backward. This is a very valuable feature for night flying. In case the pilot sees that he is going to run into a mountain or a tree or a milk wagon or a motorcycle or somthing or another, all he has to do is to pull a lever that shifts rudder and fin to the front end or rather toward the object that he is about to run into. Then he stops all sixteen motors and winds up sixteen hand wheels which change the valve timing on the motors, so they will run backwards.

Next he pulls four other levers which change the two tractor props into pushers and the two pushers into tractors. Then he starts his motor and reverses himself. If the object is still in front of him and he has not run into it, he can fly back the way he came from.

There is an angle of incidence changer. The pilot should always keep it toward the direction in which he is flying. As the wings have a leading edge on both edges, this is not so complicated as it sounds. So far there has not been a failure of any kind during test flights.

The main landing gear is made up of two whale boats fastened to the plane with Ford wishbones and hay wire. A novel feature is the scheme to permit the boats to land on land. The bottoms of the boats have a large number of 13/64th inch ball bearings inserted in them. The manner of inserting is quite similar to that of a thrust-bearing. Holes are drilled into the bottom of the boat and the ball inserted; then the hole is slightly pulled in after the ball.

Fine landings have been made on the hangar floor with this landing gear. It will stand hard shocks which has been proven by tests. I don't think that it has been shocked hard enough yet.

There are three main wings with numerous other wings attached. The lower wing is called the work wing for that is where the crew perform their work.

The wing had one beam in the center and is so mounted that the angle of incidence can be changed from 15 degrees positive to 15 degrees negative. The wing curve is Blotz 7. The aerodynamic graph had not been made yet of this wing section.

The center wing or promenade wing is the same as the lower wing except that it is different. That is that it has a different wing curve. It is a Caldwell 13. It has a very high aerodynamic deficiency.

The top wing is called the hurricane wing. Mechanically it is the same as the other two wings. It is rigged at 10¾ degrees minus declage. No one has claimed the honor of designing this wing curve. If it proves up the way it is expected I will announce to the world that I did it.

There are six other wings or rather horizontal stabilizers. You will notice that only three of the stabilizing wings show. It was found that the Modock Airscapes Corp. did not have a camera that was capable of taking a picture that would show the other three stabilizing wings. These wings are the same as the main wings.

The fuselage proper is also mounted between the work and promenade wings. It is a regular fuselage in every way, it being taken off a "flaming coffin." Instead of using linen as most builders would, Prof. Caldwell again asserts his originality using 14 guage sheet lead.

On top of the hurricane wing is another nacelle made from the fuselage of a "Tommy". This is turned upside down in order to correct the "Tommy's" natural inclination.

Four units of the old reliable OX5 are used in making up one engine. First the oil pans are removed. The upper half of the crank case is bolted unto a square casting which forms the propeller shaft housing. Each crank shaft of the OX5 is geared to the propeller shaft. This gives a sort of combination of a Vee X motor. To get an idea of how it looks, draw an X, now put a V on each leg of the X. Now you have the general idea.

A positive mechanical device is attached to each cam shaft so that the timing can be changed. With this device the motors can be run forward or backward.

The motor that is mounted in the fuselage is geared to a 4 ft., 8¼ in. propeller. It turns at variable speed. It is a tractor and helps pull the ship through the air, land or water.

The motor that is mounted in the "Tommy" fuselage on the top of the hurricane wing is also geared to a prop which rotates clockwise.

Prof. Caldwell has been working on the idea of making this crate so it will perform under water just as well as it will on water, land or in the air. This is now under way and I think that it is going to be a submerging success. The crate has been under water now for 72 hours and is likely to break all records for such a performance.

I might say that the speed range is from zero to 750 m.p.h. The low speed was taken in the hangar and the high speed just before the craft was submerged in the Modock Sound.

J. L. DERFUS,
Beverly Hills, Calif.

Caldwell Honored by Aero Club

The Alton Aero Club of Alton, Ill., has elected Cy Caldwell an honary member in recognition of his achievement in developing the Cyfibbian, hoping thereby to steal a march on his beloved N.A.A. which will undoubtedly bestow on him the Collier Trophy.

The club suggests that it would be a good idea to use rubber struts and spars in future models to absorb the shock the public will get. Also, glass cylinders could be introduced in the engines so that the mechanics could be sure about the internal condition of the engine and be saved the usual guess-

ing contest. A dihedral angle of 45° would also improve the performance according to our engineering talent.

For better stability while at anchor, the use of lead for floats would save carrying extra weight in mud anchors. Square wheels, fitted with shock absorbing bumpers would reduce the landing speed greatly.

One of our members who is more of a poet than a flier thinks he has improved on your verse.

A buck pilot from Alton, Ill.
When flying your big wind mill,
Found your balanced controls,
Never helped in the rolls,
But only gave spill after spill.

If the silk hose that we expect to be awarded to the club have runners we will return them postpaid as we don't like fast hose.

EDW. TERPENING,
Pres., Alton Aero Club.

An Objection and an Attack

TO THE EDITOR OF AVIATION:

We, the undersized, do hereby take exception to certain slurring remarks which appeared in recent issues of your famous paper by our contemporary and once faithful friend, Cy Caldwell. He implies that because of our aging years, that we seem to be losing our grip. After carefully perusing his recent columns and flying guyed, we are of the opinion that Cy is associating too closely with the Scotch Boys who are leading him into bad habits resulting in an enfeebled state of mind leading to unfair judgment of his old friends. We think he had better return to the Retreat at Worcester.

Furthermore, after careful tests of the Cyfibbian we find that the performance is not up to the specifications as advertised. Trials with a stop watch and speedometer prove conclusively that the walk which Cy guarantees to be two miles in any direction, is only 1¾ miles East, one mile South, while the distance in the fourth dimension is practically negligible.

Finally, we hereby declare that his Trade Mark is a direct copy of the McCook Field insignia for Dumber Pilots and we are arranging with Mr. Darrow to try the case. We might try a case ourselves.

This is only a part of our complaint but we withhold the balance for later issue.

In the meantime, we hereby give notice that we are no longer responsible for any debts contracted for by our former and now much lamented friend—Cy.

TONY YACKEY
CASEY JONES

American Altitude Record

A new American Record for airplanes has been recognized by the Contest Committee of the National Aeronautic Association viz:

CLASS C-Airplanes
Without Useful Load

ALTITUDE

Lieut. John A. Macready, U.S.A.S.,
C.O.5, Liberty 400 hp. (supercharged) at
McCook Field, Dayton, Ohio. Jan 29, 1926 — 11,797 m. 38,704 ft.

Former Record Altitude

Lieut. John A. Macready, U.S.A.S.
LePere Biplane, Liberty 400 hp. (supercharged)
McCook Field, Dayton, Ohio, May 24, 1924 — 10,741 m. 35,239 ft.

The present World Record is held by France:

ALTITUDE (France)

Callizo, Gourdon - Lesseure Monoplane,
Hispano Suiza, 300 hp., Rateau Supercharger,
Villacoublay, Oct. 10, 1924 — 12,066 m. 39,586 ft.

IRVING AIR CHUTE

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BRITISH AIR MINISTRY - ROYAL CANADIAN AIR FORCE

AIRPORTS AND AIRWAYS

Los Angeles News

By Geo. B. Harrison

Radio broadcasting of aviation progress and flying data is a regular feature of the work of the Long Beach Aero Club of Long Beach, Calif. This is done through broadcasting station KFON at Long Beach, 233 meters, by arrangement made by Hal Nichols, one of the owners of the broadcasting station and a leading member of the club. William Fox, commodore of the Aero Club, Earl Daugherty and Mrs. Daugherty, Hal Nichols and other members have contributed numbers on the programs already given.

Telegrams and letters from many points to Station KFON show an appreciation of the aviation programs which is very encouraging to the Long Beach Club. These have come from as far away as New Zealand and Alaska. Officers of the air services in distant points seem to be especially appreciation of the aviation programs.

The Aero Club programs are given every Tuesday evening from 9 p.m. to 12:30 a.m., Pacific standard time. The broadcasting station is owned by Nichols & Warriner, Inc.

The California Development Association, an organization of leading business men throughout California, is considering the addition of an aero department to forward flying activity in that State. This was suggested to the association by officers of the Western Aero League and the San Francisco Chamber of Commerce, which have co-operated in laying out a plan for activities. Meetings to confer with flying authorities have been held at San Francisco and Los Angeles.

If the idea is taken up, the association will apoint a department head, who will give his time to furthering aviation in California, and he will be available to municipalities, chambers of commerce and other organizations, especially in connection with the establishment of permanent aviation fields.

Roy Knabenshue has just completed the design and construction details, at his home in Los Angeles, for a new type of rigid airship. He has developed an all-metal type, planning the use of steel and duralumin and securing large capacity by eliminating interior balloons.

Knabenshue has built and successfully operated twenty-one dirigible airships, including one with a capacity for twelve passengers, which he operated continuously for thirteen months. In his new design he embodies several novel results from his twenty years of practical flying experience. Among these are an ingenious and entirely new idea for compensating as to pressure changes, addition of mechanical steering devices which will greatly lessen the work of the helmsmen and a new method of strengthening the hull without adding undue weight. The work of design and developing plans has taken most of Knabenshue's time for the past five years.

Moline, Ill.

By W. B. Mueller

Neon bulbs will be used for lighting an airport for the first time in the United State at Moline, it has been announced by Donald Bartlett, assistant general manager of the National Air Transport, Inc., which holds the contract for the new Chicago-Dallas air mail route, which will serve the tri-cities.

Mr. Bartlett gives a report on the test of the tubes, made at

AIRPLANES FOR SALE

We sold over $110,000.00 worth of airplanes, motors and parts last year and still have a large number for sale. We believe the prices on airplanes are at their lowest, and a small deposit on any of our airplanes will hold same for spring delivery. We expect a sharp advance in prices very soon.

We still have plenty of Standards, Jennies, Canucks, Orioles, D.H.'s with Liberty motors, Spads less motors, T.M. Scouts with and without motors. A large number of these airplanes are set up, test flown, and ready for immediate fly away delivery. Come and take your pick.

NEW STANDARD J-1 AIRPLANES with guaranteed overhauled Hispano-Suiza motors, 150 H.P.	$1500.00
NEW STANDARD J-1 AIRPLANES with new OXX6 motors	1300.00
NEW STANDARD J-1 AIRPLANES with Government overhauled OXX6 motors	1100.00
NEW STANDARD J-1 AIRPLANES with new OX5 motors	1100.00
NEW STANDARD J-1 AIRPLANES with Government overhauled OX5 motors	900.00
NEW STANDARD J-1 AIRPLANES without motor	650.00

These airplanes come complete with tools and instruments and the front seat is built so as to accommodate two passengers. These airplanes have been reconstructed and new longerons, new controls, new wires, new struts, new fittings, new instruments were installed where needed. One-third deposit will hold any of the above airplanes for spring delivery, storage and insurance free.

No bond required
No charge for breakage

LEARN TO FLY
$100.00
INCLUDING SOLO

Room and board near field at $10.00 per week.

Eight years without an accident — **76 Students Graduated in 1925**

We guarantee to solo our students regardless of the number of flying hours required. We also furnish planes at very reasonable rates for those who wish to qualify for the F.A.I. pilots certificate and we maintain an employment agency for our graduate pilots.

The flying school of the Robertson Aircraft Corporation is one of the oldest and best known in the United States. Our instructors are ex-army aviators and are mail pilots with wide experience and our training equipment is the best obtainable. In over eight years of operation our students have never damaged a ship in their solo flights.

The flying field is approximately six miles from St. Louis and is easily accessible by railroad, street car and hard surfaced roads. It is the largest and best privately owned field in the country and the International Races of 1923 were held there. Mail planes arrive and leave daily.

Our course requires about two weeks, depending on the individual, and after its completion the refinements of the art can be gained only from experience. Commercial aviation is a rapidly growing industry. Don't delay! Enroll now!

WRITE FOR BOOKLET

It is not necessary to purchase an airplane in order to take this course.

ROBERTSON AIRCRAFT CORPORATION

OPERATORS OF UNITED STATES AIR MAIL ST. LOUIS-CHICAGO

LAMBERT-ST. LOUIS FLYING FIELD, ANGLUM, MO.

Croydon airport, London, and the tester said the illumination turns fog and mist into a pool of red light which may be seen easily, even above the fog. It is said they have never been tried out in the United States.

The Travel Air plane, in which E. K. Campbell of Moline made the first Ford Reliability tour with a perfect score, has been sold to O. J. Mallette of Sterling, Ill. A new Travel Air has been ordered from the company and will be delivered in time for spring activities. The Campbell-De-Scheppers airplane company also has purchased another Waco plane.

Moline aviation boosters are making tentative plans for an elaborate flying circus to be held on the day when the first mail is carried on the Chicago-Dallas route.

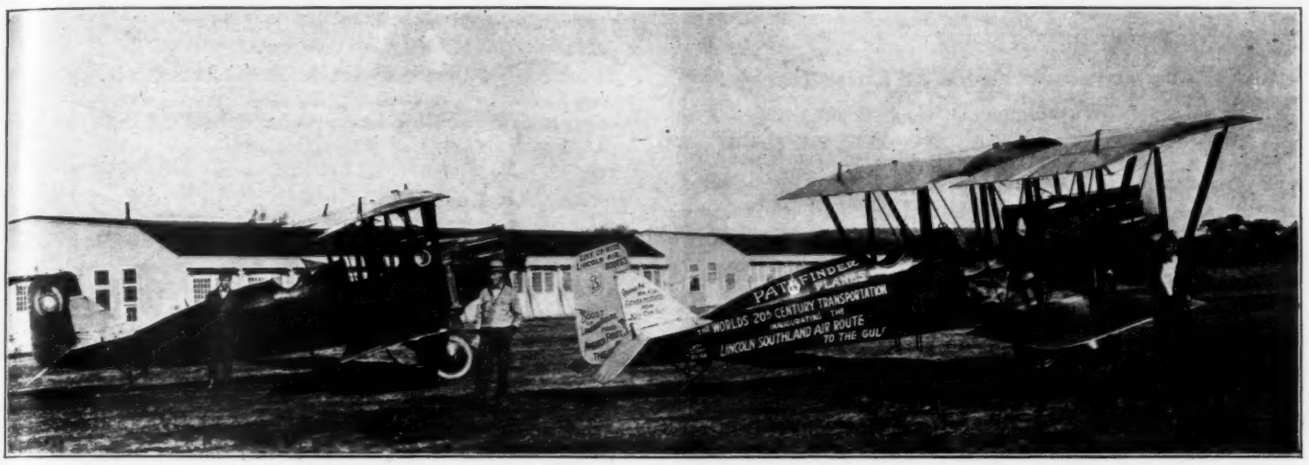
Lincoln Has New Landing Field

By Ray Page

The recent purchase, by the Lincoln Standard Aircraft Co. of Lincoln, Neb., of 80 acres, South of the city of Lincoln, insures one of the finest landing fields in the Middle West. There is a move on at the present time, through the co-operation of the Lincoln Standard company and the Lincoln Chamber of Commerce to make this a municipal proposition.

The field is located one mile South of the State Penitentiary which is located at the Southwest corner of the city. The field will be marked and lighted with flood lights for night flying.

A contract has been let for one large hangar, 60 ft. x 120



Lincoln Pathfinder at Austen, Texas. Left, Pilot, R. Cochrane. Center, F. H. Morris. Right, Pilot, W. B. Atwell.

WOODSON EXPRESS
Type 2-A Four Place

FOR PERFORMANCE, RELIABILITY, MANEUVERABILITY, SAFETY AND ECONOMY, THE WOODSON EXPRESS IS UNEQUALED.

This model will carry a pay load of 600 pounds exclusive of pilot and fuel for 4 hours and has a seating capacity for three passengers and pilot making it a most desirable all-around plane.

FOR EXPRESS, MAIL AND PASSENGER LINES, TAXI SERVICE, MAPPING, SKY-WRITING, ETC.

Powered with either the 260 HP Salmson water cooled radial or the 200 HP Wright J-4 Whirlwind air cooled radial.
Deliveries are being made in numerical order and orders for early spring delivery must be placed now.

It Will Pay You Well To See This Plane Before You Invest In Other Equipment.

We will gladly give a demonstration without obligation, at any time you can arrange to visit our field at Bryan

Write or wire now for appointment

WOODSON ENGINEERING COMPANY
BRYAN, OHIO

ALL METAL

Planes and Parts

STIFFNESS under load has many advantages. Obviously it makes a handsome contribution to strength, but sometimes one fails to realize that it is also convertible into aerodynamic effectiveness.

YOU KNOW, of course, that so far as the wings are concerned, effectiveness in climb and ceiling with a given power loading and a given airfoil depends upon the maximum possible aspect ratio, and you know that in bi-planes the aspect ratio has usually been rather limited in its benefits by a multitude of interplane wires and braces.

BUT DID YOU KNOW that single bay bi-planes with only moderately thick wing sections, say 12% of the chord, were quite possible in aspect ratios of 10 to 11?

I DO NOT MEAN that any design built of any material will safely provide such a wing cellule, but that our cambered spars with their extraordinary rigidity under loading will do this we are prepared to demonstrate to you. Worth your investigation too are our complete airplanes, or seaplanes, design or other details, the use of our special equipment for stamped of drawn metal, and license under my patents.

CHARLES WARD HALL, *President*

CHARLES WARD HALL, INC.
156 EAST 42ND STREET NEW YORK
Contractor to the U.S. Navy

ft., and eight single airplane hangars. A new and up to date gasoline station will be located on the field and will be under the supervision of the Coryell Oil Co. of this city. High test gasoline and oil will be available for fliers at all times.

A new school of aviation will be opened on June 1 and the company has already enrolled a large number of students to take up the work at that time.

Balloon and Airplane Races at Little Rock, Ark.

C. F. Schory of Washington, D. C., Secretary of the Contest Committee of the National Aeronautic Association inspected the Little Rock, Ark., airport on Feb. 5, 1926. Mr. Schory stated that he was most favorably impressed with the development of aeronautics in Little Rock and the facilities available at the Little Rock Million Dollar Airport, which, he said, compared most favorably with the best in the United States.

Ten days prior to Mr. Schory's visit here, $30,000 was subscribed within a few minutes and the Little Rock Air Meet Association was organized to handle the National Balloon Races. C. L. Thompson, former president of the Chamber of Commerce of Little Rock, being elected president.

Advice was received by wire on Feb. 12, that the National Balloon Race was awarded Little Rock and it has been decided to hold the Balloon Race on April 29, and the Arkansas Airplane Races and Exhibitions April 29 and 30, 1926.

An intensive membership campaign was decided upon at a luncheon of the Little Rock Chapter N.A.A. on Feb. 10. The goal is 1,000, which, from all indications, will be reached.

Gov. Tom J. Terral; Adj. Gen. James B. Wayne; Col. J. Carroll Cone, State Auditor and Moorhead Wright, Governor-at-large, N.A.A., as well as the business and professional men of the State, are very enthusiastic and will make every effort to make the National Balloon Race and the Arkansas Airplane Races, to be held on April 29 and 30, a success. The Chamber of Commerce and other Civic bodies are enthusiastically behind this project.

Maj. Reed M. Chambers, president of the Florida Airways Corp., was a guest of honor at a luncheon of the local chapter. Major Chambers declared that the Little Rock Million Dollar Airport had unlimited prospects and that the citizens of Little Rock should be commended most highly for their efforts in securing the National Balloon Race, saying that the holding of the race would do more than any one thing could do to gain recognition for the city in the "flying world".

It is desired that every state be represented in the Airplane Exhibition and the races and manufacturers of airplanes, aircraft engines and accessories are cordially invited to have exhibits of their products there.

Varney Air Line

Postmaster General New announces that the Elko, Nev.-Pasco, Wash. air mail route, which was granted to Walter Varney, will be officially opened on April 6. Mail from New York City will then reach the extreme Western section of the United States in approximately 30 hr. For example, a train leaving New York at 10:10 p.m. Monday night will be due to reach Seattle at 8:50 p.m. Friday night. By air, mail leaving New York at 8:10 a.m. on Tuesday will reach the Northwest at 6:25 p.m. Wednesday and be placed on the desk of the business man in Portland, Seattle, Tacoma, Everett and other cities of this section of the country at 7:00 a.m. Thursday morning.

A train leaving Seattle at 11:45 p.m. Monday night is due to reach San Francisco at 11:30 a.m. Wednesday morning; while mail dispatched from Seattle at 7:30 p.m. Monday night, to connect with the Elko-Pasco plane, will reach San Francisco 5:00 p.m. Tuesday. This expedition service is correspondingly just as great to the cities of Portland, Tacoma, Bellingham and Everett, and, in fact, all cities throughout the Northwest.

Coming from San Francisco, there is also an opportunity to

ANNOUNCING

Chesapeake Aircraft Company
HEADQUARTERS ARMORY
BALTIMORE, MD.
as
Dealers in MARYLAND, VIRGINIA and DISTRICT OF COLUMBIA
for
TRAVELAIR AIRCRAFT

We have thoroughly investigated the OX-5 engined field and have chosen the TRAVELAIR, for quality, strength and performance.

SPECIAL AERIAL SERVICES
Passenger and Express Service, Aerial Photography and Advertising.

FLYING SCHOOL
Course, $250.; No bond for solo flight. Board and lodgings, within walking distance of Logan Field, $14.00 per week.

Our Instructors have 100 per cent safety records.

Seamless Steel Tubing
ROUND, STREAMLINE, ETC.
Furnished to Specifications in
STRAIGHT CARBON
NICKEL STEEL
CHROME MOLYBDENUM
Specialists in Aircraft Tubing—Manufacturers for 25 Years.
SUMMERILL TUBING COMPANY
BRIDGEPORT, MONTG. CO. (Philadelphia District) PA.

DOPES
PIGMENTED DOPES
VARNISHES ENAMELS
TITANINE
MADE BY
TITANINE, Inc.
UNION, UNION COUNTY, N. J.
Contractors to U. S. Government

expedite mail between San Francisco and the cities of the Northwest by means of the government-operated service to Elko and the Elko-Pasco route up to the Northwest.

The schedule for the Elko-Pasco route is as follows:

Leave Pasco 6:00 a.m.; arrive Boise 8:35 a.m.; Leave Boise 8:50 a.m.; Arrive Elko 11:05 a.m.; Leave Elko 1:20 p.m.; Arrive Boise 3:35 p.m.; Leave Boise 3:50 p.m.; Arrive Pasco 6:25 p.m.

Field at Blackwell, Oklahoma

The Union Aircraft Corp. of Blackwell, Okla., announces that it has secured an ideal landing field and that hangars and shops are now under construction, which should be completed by March 10. Commercial pilots will rest assured of excellent service in all respects in planning their route so as to stop off at Blackwell.

The field proper comprises 80 acres of well sodded, level, drained ground, clear of hazards and having a half mile run to any point of the compass, with additional landing facilities available of over 400 acres West, South and North. Markings consist of the regular 100 ft. circle, with a 4 ft. band and a "T" wind guide in the center. There is a wind cone on top of hangar. The field will be equipped for night flying with flood lights and a beacon shortly.

The location of the field is one mile due West of the city. Ease of finding is aided by two 300 ft. chimneys, ¾ of a mile North and ½ mile East of the hangar. Visiting aviators may have their choice of several leading grades of lubricating oils and gasoline and plenty of service. Transportation is provided free of charge. Altitude 1020 ft. above sea level.

The Union Aircraft Corp. extends a sincere and hearty welcome to all pilots and their associates on behalf of the company and the City of Blackwell.

Helena, Montana

By H. L. Lay

Jack Lay has had his small biplane on a lake near here rigged up with skiis and minus the wings. He realized a very good trade from skaters and skiers who wanted more speed. His three place OX5 plane is nearing completion and will probably be in the air by the first of the summer flying weather.

The work on the two sport planes being made by the Zenith Aircraft Co. is progressing rapidly. These planes are to be single seaters with Anzani 3-cylinder engines, and of parasol monoplane construction.

Helena hasn't seen an itinerant flier for so long that they are beginning to get stoop shouldered. We would appreciate any flier giving us a visit. We can accommodate nearly any size ship and pilot.

A New Swallow Distributor

The Muncie Aerial Co., of Muncie, Ind., have been appointed distributors for the new Swallow OX5 airplane.

On Feb. 20 E. E. Basham of the Muncie Co., flew the first plane of his company's quota of 12 Swallows, from Wichita, Kans., to Muncie, Ind., in 6 hr. 2 min., the distance being approximately 875 miles. One stop, for gasoline, was made at Anglum Field, St Louis.

The Muncie Aerial Co., wishes to extend, through AVIATION, a cordial welcome to all fliers to land on their 120 acre field, which is marked by a circle and L, with the words "Muncie Airport" on a hangar.

Winter Flying Record Over Model Airway

During the month of December, in spite of unfavorable weather conditions, all flights started over the Model Airway were completed. There were no accidents and just one forced landing. This is a record for winter flying that the Air Service may well be proud of.

In order to improve the facilities offered visiting personnel at stations on the Model Airway, the Chief of Air Service has directed that a record chart showing all facilities offered at stations be kept in the Airway Section, Office, Chief of Air Service. This chart will be corrected monthly from reports made by pilots flying the scheduled airways.

SIX

New Liberty Aircraft Engines

12-Cylinders

with all improvements

SPECIAL--$2,000 EACH

Wire Your Order

JOHNSON MOTOR PRODUCTS, INC.

518 WEST 57th STREET
NEW YORK, N. Y.

CLASSIFIED ADVERTISING

WOOD INSPECTOR: Young man with training in a recognized school of forestry. A year or more practical experience an asset. Details as to age, training, experience and salary expected in first letter. The Glenn L. Martin Company, 16800 St. Clair Ave., Cleveland, Ohio.

FOR SALE: New OX5 Standard, original factory job. Has always been stored in hangar. Price without motor $750.00. OX5 motor $150.00 extra. Will consider delivering within 500 miles. Box 435, AVIATION.

FOR SALE: One De Haviland six airplane, completely rebuilt and recovered, with OXX6 motor for $1,100.00. Also OX5 and OXX6 motors. Karl Ort, York, Pa.

YOUNG MAN aged 26, with three years experience overhauling, testing and adjusting. Two years' hangar experience. Wishes position as motor mechanic or helper. Box 436, AVIATION.

FOR SALE: One two place Sperry Messenger, 60 hp., Lawrance motor. Ship and motor have only had fifty hours since leaving factory. Is owned by private party. Can be seen at Stinson Field, San Antonio. First one thousand dollars takes ship. A rare bargain. Address P. O. Box 420, San Antonio, Texas.

FOR SALE: 15 Liberty motors, some new, some used, all in the best of condition. Lee Templeton, 407 W. Main St., Norristown, Pa.

AERIAL CAMERA WANTED: Please state full particulars. The Wm. F. Gamble Co., Dept. S, Altoona, Pa.

FOR SALE: Jenny, OX5 motor, turns 1425, price $650.00; T.M. Scout motor, turns 1200, price $450.00. These planes are in A-1 shape. Always stored in hangars. Also overhauled OX5 motors $125.00. Chas. G. Offutt, Hudson-Essex, Petaluma, California.

WANTED: K-6 and C-6 motors and parts; price must be low. Robertson Aircraft Corporation, St. Louis Flying Field, Anglum, Mo.

FOR SALE: Le Rhone 80, never used, in original box, complete tools and parts, $60. Monoplane wing for light plane, 20 ft. span, wing cord 4 ft. 6 in., wing section Ofttinger No. 387, ailerons and complete tail unit. Reason for selling have to go to Europe, price $75. Charles Lukas, Park of Edgewater, Throggs Neck, 50 Section A, Bronx, New York City.

FOR SALE: Set of grade "A" Jenny covers $95.00; Canuck $100.00; Standards $105.00; cloth 35c yard, tape 5c yard. Acetate dope $1.60 gallon, five gallons $7.50; set OX5 gaskets $2.00; prints and parts for Huntington light monoplane, fuselage, one wing, aileron and rudder, built, all other parts ready for assembly. Crated, $60.00 takes it. Three Jennies $850.00, $1,000.00, $1,400.00, all recovered. New motors, three Canucks, very good, $750.00, $800.00 and $850.00. Sweebrock Aviation Co., 1117 Fairfield Ave., Fort Wayne, Ind.

FOR SALE: Canucks, Jennies, Standards, OX5, OXX6, 150 hp. Hisso, Liberty Six. Also parts for ships and motors. Write for prices. Niles Airways, Niles, Michigan.

New AC bar type spark plugs, 30 c; new 26x4 tires $5.00; new OX5 cylinders $4.75; Zenith jet wrenches 40c; OX5 copper-tipped Flottorp propellers $11.00; new Standard 54 gal. gas tanks $32.50; Standard planes, instruments, spares and accessories. J. L. Schroeder, Box 380, Houston, Texas.

WANTED: Six brand new OX5, 4, 150 hp. Hispano Suiza and 2 Liberty motors. We pay spot cash, a fair price and guarantee. M. W. Harry, 711 King Street, Seattle, Wash.

AIRCRAFT MOTORS REBUILT: We have the machinery to do anything in this line, electrical system included. Richmond Machine Works, 343-353 Seventh Ave., Homestead, Pa.

United States Air Forces

Dayton-Boston Record

On Feb. 28, a new record was set for the 725 miles between Dayton and Boston when the distance was covered in 5 hr. 50 min. The trip was made by Lieut. Lyman P. Whitten and Bradley Jones, test pilot and instrument engineer, respectively, at McCook Field, Dayton. An average height of between 8,000 and 9,000 ft. was maintained.

The fliers were guided by the new earth inductor compass, a new drift indicator and other instruments. The direct course they were able to follow was said to account in part for the fast time, an average of 125 m.p.h. in a regulation DH4B3. They were helped also by a favoring wind. Carrying 150 gallons of fuel in special tanks, the fliers had twenty gallons of their reserve left when they reached Boston.

Army Fliers Pilot Douglas O-2's from Pacific Coast

Seven officers from Kelly Field, Texas, left recently for Santa Monica, Calif., for the purpose of ferrying back to Kelly Field five new Douglas O-2 planes. The trip to the Pacific Coast was made in a Douglas Transport piloted by Capt. F. I. Eglin. Those making the trip as passengers were: Maj. Frank M. Andrews, Capt. Robert C. Candee, 1st Lieuts. A. C. Kincaid, Y. A. Pitts and T. W. Blackburn. Leaving Kelly Field on Saturday, January 30th, the Transport made a stop at Tucson, Ariz., and left that place at 10:10 a.m., January 31st, reaching Rockwell Field that evening.

Major Andrews and Captain Eglin returned to Kelly Field with new Douglas O-2 planes on February 8th and Lieut. Pitts arrived with the Transport on the same date. Lieuts. Kincaid and Blackburn brought in two more O-2's on February 9th. Captain Candee will ferry another O-2 back on the completion of a seven-day leave of absence on the West Coast.

Activities of the Field Service Section, Fairfield, Ohio

It is the policy of the Field Service Section—the field and operating office of the Supply Division—to give all possible assistance to Commanding Officers, not only by furnishing supplies as promptly as circumstances will permit, but also by personal contact with Commanding Officers in the field to find out just what are the most urgent problems in supply and maintenance.

In accordance with this policy, Lieut. C. A. Cover, Lieut. Leon E. Sharon and Mr. W. D. Kennedy made an extended trip by air recently from Fairfield to San Diego, visiting enroute practically all of the Air Stations in the West.

Maj. George H. Brett, Officer in Charge of the Field Service Section, has been detailed a member of the Air Service Technical Committee on standardization, and made a brief visit to Washington recently to attend a meeting of this Committee.

Mr. O. J. Neiff returned from the Pacific Coast, where he prepared catalogs of airplanes being manufactured at the plants of the Boeing Aircraft Company at Seattle, and the Douglas Aircraft Company of Santa Monica, Calif. Mr. L. W. Armour is preparing a catalog of the Loening Amphibian Airplane at New York City. Mr. W. M. Moore returned from the Middletown Air Intermediate Depot where he assisted the Coast Officer in putting into effect the Air Service Cost Accounting System.

The following brief account of the work of the Field Ser-

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vice Section may be of interest to the Air Service at large:

The Officer in charge of the Field Service Section is Maj. George H. Brett. With him are four other officers—Lieuts. L. E. Sharon, C. A. Cover, B. M. Giles and W. J. Hanlon—and one hundred civilian employees.

The duties of the Field Service Section are to supervise the maintenance of Air Service equipment; to direct the operation of Air Intermediate Depots; to direct the distribution of supplies to all field activities; to recommend the procurement of supplies; to maintain consolidated records of all supplies on hand in the Air Service; to prepare catalogues of aeronautical equipment; to prepare tables of basic allowances; and to supervise all cost accounting activities. It maintains close coordination with the Engineering Division (McCook Field) on all problems mentioned above; also on questions of design, service test and development.

For the efficient administration of these lines of work, the Field Service Section is divided into four branches—Maintenance, Material, Cost-Requirements and Coordination.

In February, 1925, personnel became available for the establishment of a Methods Section within the Maintenance Branch. The few instructions which had been issued prior to that time were prepared by personnel engaged in routine duties. Due to the careful study necessary and the amount of labor involved in the preparation of methods, only such instructions as were absolutely required in the Service had been published up to that time. The manuals to be written by the Methods Section will eventually solve many of the maintenance difficulties confronting Engineer Officers in the field. Complete instructions covering the Liberty engine will be published in the near future.

The Field Service Section is the agency charged with recommending what materials shall be purchased, such recommendations being based on data of actual consumption of supplies at all Air Service stations, and it passes upon all questions pertaining to distribution and issuance of supplies.

A number of catalogues of Air Service equipment have recently been compiled and more are now in progress. Members of the Field Service Section are detailed to the factories where new types of airplanes are being constructed, in order that the catalogues may be published at approximately the same time that the planes are delivered to the service. These catalogues are illustrated with photographs showing the various parts and assemblies. They are especially useful to Supply Officers at all stations for ordering supplies and for keeping the correct names and part numbers on their stock record cards.

The Field Service Section aims to be an alert, progressive organization. "Service" is its middle name, and service to every station and to every pilot is what it is endeavoring to give.

Destructive Fire at Wright Field

Wright Field was the scene of a fire which started about 8:15 a.m. February 8th, in the Dope House. Within less than a minute the entire Dope House was in flames, and despite the heroic efforts of the Post Fire Department, the Engine Repair Building, adjoining the Dope House, was also consumed. The Oil Reclamation House, the Gas Plant and several smaller buildings were also a total loss. The Machine Shop, Aero Repair and all other buildings of the Engineering Department were saved.

Fire fighting equipment was summoned from Dayton and from Osborn; and the entire military and civilian personnel assisted in subduing the flames and removing property to places of safety. Only one airplane was burned, a Martin Bomber in the Dope House. The Liberty and D-12 engines in the Engine Repair Building were saved, with one exception; but the engine spares in the stock room were a complete loss.

Boosting the Flying Time at Kindley Field

November was a banner flying month for the personnel of the 2nd Observation Squadron at Kindley Field, Fort Mills, P. I. All six Douglas Cruisers were in commission during most of the month for the first time since received, and the aircraft flying time was over twice as much as it had been at any time during the past two years.

Advanced Flying School Has Gunnery Practice

Students attending the Advanced Flying School at Kelly Field, Texas, are by this time indulging in gunnery practice at Galveston, Texas. According to plans and preparations for this event, the Gunnery Expedition was scheduled to leave Kelly Field for Galveston, Texas, on February 20th. Capt. A. B. McDaniel, Officer in Charge of Training at the Air Service Advanced School, left for Galveston on February 10th to complete arrangements for the gunnery site.

Army Air Orders

Sec. Lieut. Theodore A. Baldwin, 3rd, A.S., Brooks Field, to Fort Sam Houston.

First Lieut. Clyde Virginius Finter, promoted to rank of Captain.

Private (1st Cl.) Jacob Dombrowski, jr., A.S., 47th Serv. Squad., Brooks Field, transferred to 47th Sch. Squad.

Resignation of First Lieut. Wallace Robinson Fletcher, A. S., of his commission as officer, accepted.

Maj. Norman W. Peck, A.S., Scott Field, to Akron, to assume duty as officer in charge of District A. S. Proc. Office.

Maj. Henry H. Arnold, A.S., Washington, to Marshall Field.

Capt. Olaf P. Winningstad, A.S. (Ord.), relieved from assignment and duty A.S. Adv. Fly. Sch., Kelly Field, and will report to Com. of that school for ground instruction.

Master Serg. Louis Imhof, placed upon retired list at Fort Bragg.

Sec. Lieut. Howard E. Engler, Cav., Fort Bliss, detailed in the A.S., Brooks Field.

Sec. Lieut. Joe L. Loutzenheiser, Cav., Fort Bliss, detailed in A.S., Brooks Field.

Sec. Lieut. Sidney L. Douthit, Inf., Fort Benning, detailed in A.S., Brooks Field.

Sec. Lieut. Alden R. Crawford, A.S., Brooks Field., to San Francisco, sailing on transport Apr. 3 for Philippine Islands.

Resignation of First Lieut. Leigh Wade, A.S., of his commission as an officer, accepted.

First Lieut. Walter K. Burgess, A.S., assigned to duty Kelly Field upon completion of tour of foreign service.

Transfer of Sec. Lieut. Arthur C. Boll, A.S., Fort Sam Houston, to Signal Corps, announced.

Capt. Idwal H. Edwards, A.S., Off. Ch. A.S., to Walter Reed General Hosp., Washington, for observation and treatment.

Staff Serg. Neil B. Stimmel, A.S., Post Field, Fort Sill, transferred to detached men's list and detailed to duty with Ark. Nat. Guard.

First Lieut. Charles A. Horn, A.S., Brooks Field, to Kelly Field, for temp. duty, thence to Chanute Field, temp. duty, and thence to Washington.

Maj. Sumpter Smith, A.S. Res., Birmingham, to active duty Washington, reverting to inactive status Apr. 16.

Maj. William Duncan Tipton, A.S. Res., Catonsville, Md., to active duty Washington, reverting to inactive status Apr. 16.

Maj. William Hale Dayton, A.S. Res., Denver, to active duty Washington, reverting to inactive status Apr. 16.

Capt. Horace N. Heisen, A.S., Langley Field, to Boston, to command Boston Air Port.

Capt. William E. Kepner, A.S., Brooks Field, to Scott Field.

Sec. Lieuts. Russell T. Finn, John L. De Pew and Raymond C. Conder, A.S., Brooks Field, to Fort Sam Houston.

Navy Air Orders

Comdr. Jacob H. Klein, jr., det. Nav. A. Sta., Lakehurst, to temp. duty under instr. Subm. Base, New London.

Ch. Carp. Frederick A. Johnson det. Nav. A. Sta., Pensacola, to Nav. Air Sta., N.O.B., Hampton Roads.

Capt. Robert W. McNeely det. Nav. A. Sta., Pensacola, to Key West, Fla.

Ens. Homer B. Hudson det. Nav. A. Sta., Pensacola, to Nav. Acad., Annapolis.

Lieut. Henry T. Stanley det. Nav. A. Sta., Coco Solo, Canal Zone, to Aircraft Sqdns., Battle Flt.

Lieut. (jg) Edmund T. Stewart (SC) to continue duty Nav. A. Sta., Lakehurst, orders Feb. 10th revoked.

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PUBLISHER'S NEWS LETTER

When this letter is read, the writer will be nearing the hospitable shores of the other side. From the letters that have been received recently, it has become evident that this page has taken on a more personal character than is usual in magazine editorial contact with readers. The readers of AVIATION seem to have become a group of friends who look on it as their own paper rather than merely a news magazine. This cordial attitude is, of course, greatly appreciated, particularly as the problems that have had to be considered in the last year have been such that several different views could all have met with approval. When there have been different courses to be followed, the whole subject has been carefully considered and a positive position taken. This is not the easiest way by an means, for, in aviation, there seems to be a great variety of opinions held by persons who deserve respectful consideration. Recently, the letters that have been written on the matter of regulation have included much advice and many suggestions that have been helpful.

* * * *

As to the matter of regulation of aviation, it is now in the hands of the pilots and operators themselves. AVIATION has, for the first time, given the varied opinions of fliers and from these views much informative and constructive help can be gained. But it now appears probable that this session of Congress will bring forth some sort of a bill that will at least give those who want regulation what they have been seeking for several years. A publication cannot do more than give the views of its readers and then await the outcome. Every airman in the country should have an interest in this legislation and follow it through Congress with the greatest care. It will be one of the matters that cannot be given further consideration in these pages as long distance discussion of such important matters usually results in the spreading of misinformation. We, therefore, leave this all-important subject on the laps of the gods and wish, with all the earnestness that we can express, that it will all come out right at the end.

* * * *

It is regrettable that more of the letters that we have received could not have been published. The several hundreds of pilot friends who have taken an interest in this all-important subject have expressed all shades of opinion from a desire to protect the public with the strictest of regulations to those who believe in no regulation of any kind and that any kind of regulatory measures brings graft in its wake. Between these two extremes there is undoubtedly a sensible mean course and; if those who are to be regulated continue to take the interest they have already shown, there is little danger ahead. It will require that every person interested do more than watch the passing events. They will have to indicate to those in authority their views on his all-important matter.

* * * *

As was said a week or so ago, the plans for this tour of the air lines of Europe had better remain indefinite until they are accomplished. If the delightful invitations that have been received to fly over some of the most interesting routes that are now running can be accepted, it ought to be possible to send back some News Letters that will have an interest that is not possible to put in them from a desk chair. While this absence from the weekly grind of editorial and business routine will be in the nature of a vacation and not an editorial visit, it will be just a change from one interesting aeronautical situation to many others. If AVIATION were as prosperous as trade papers in other fields, a trip such as this ought to be a part of the yearly routine of editorial observation. Unfortunately this is not the case but it is not going to prevent our attempting to make as comprehensive a survey of air transport as possible.

* * * *

In the reports that are sent back, for that is what the accounts will necessarily be, there are two points that will be kept uppermost. First, facts from which opinions can be drawn will be given in as complete detail as possible. Then the personal side of the leading aeronautical celebrities will be drawn with the idea of making them better known to our readers. It is probable that some weeks may go by at a time when there will not be a possibility of getting mail out from some of the places that it is hoped will be visited. In that case the details may be all the more interesting. The usual beaten track has been covered so many times that it is hoped that some new places may be visited that will be new to American visitors. But there again the pen is slipping and perhaps it is just as well to close until the next time.—L.D.G.

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